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DIESEL RAILWAY TRACTION

A Supplement illustrating and describing developments in Diesel Railway Traction is presented with each copy of this week's issue

The Age of Leisure

WITH the increasing pressure of world economic difficulties ever in mind, all eyes turn to the annual meeting of the British Association for the Advancement of Science in the hope of finding there some guidance. Although the Presidential Address of Sir James Jeans last Wednesday did contain a brief reference to current conditions, it was too cryptic to be very helpful. "There are many," he said, "who attribute most of our present national woes—including unemployment in industry and the danger of war—to the recent rapid advance in scientific knowledge." Sir James would not admit that the activities of the scientists aggravated these problems, and cited the examples of Faraday's electromagnetic induction, Maxwell's Hertzian waves, and the Otto cycle as having provided employment for millions of men. Of course they have—indirectly—but there is now a steadily increasing lag between scientific advance and employment, and the fact is at last beginning to be realised that you cannot simultaneously *save* labour by machinery and *make* labour in the same way. It is the old story of the impossibility of having your cake *and* eating it. Cake is meant to be eaten, leisure to be enjoyed. The "problem" of unemployment is the solution of that problem of all the ages—the removal of the curse of Adam—which every individual instinctively, as well as deliberately, strives to find. For the first time in history we are in the midst of a civilisation which, because it has harnessed solar energy to machines, could make leisure possible, and we cannot realise it!

* * * *

An Electric Rejuvenation

Actually, the first stage in the modernisation of the Tyneside electrified area of the L.N.E.R., referred to in our *Electric Railway Traction Supplement* for July 27, was accomplished last year by the opening of a new station, West Monkseaton. Sundry minor but definite improvements have been carried out since in a quiet way, and the complete scheme, with the exception of the rolling stock programme, is now almost finished. Acceleration of the trains forms one of the principal aims of the new works, but this is not being attempted until the new vehicles are ready. Improved operating facilities are now available, consequent upon the erection of two new substations and the laying of heavier conductor rails; the alteration of the tracks in North Shields tunnel; and the either-way signalling installed between the Central and Manors stations at Newcastle. It is in the rolling stock, however, that the most revolutionary alterations are to be made. No fewer than 44 twin motor-trailer units and 3 motor vans of modern all-steel type are to be built, and, in addition, 35 existing motor coaches and trailers and one motor van will be fitted with new electrical and brake apparatus. The open type of car with a large standing capacity is to be retained, but a distinct innovation for electric suburban stock will be made by the introduction of bucket seats. Interior and exterior decorations will resemble the style of the well-known L.N.E.R. tourist trains. The scheme as a whole forms ample evidence of the recognition by the executive officers that a forward policy brings back lost revenue, for there can be little doubt that the continued depression on Tyneside must have diminished the receipts.

* * * *

The Week's Traffics

Every item of traffic of the four group companies shows an increase for the past week, and this is the more satisfactory as the week's total for each company showed a substantial increase at this time a year ago over the corresponding week in 1932. The aggregate totals of the four companies for the 35 weeks of 1934 amount to £100,226,000, an increase of £4,294,000 or 4·48 per cent. over the corresponding period of 1933. Passenger train traffics of the four companies together for the 35 weeks now aggregate £45,669,000, an increase of £546,000 or 1·21 per cent. over 1933. Merchandise receipts for the same period amount to £34,398,500, an improvement of £2,606,000 or 8·20 per cent. From coal class traffics the aggregate earnings are £20,158,500, an increase of £1,142,000 or 6 per cent.

	35th Week				Inc. or dec.	
	Pass. &c.	Goods, &c.	Coal, &c.	Total.	Year to date	
	£	£	£	£	£	%
L.M.S.R. ..	+ 3,000	+ 15,000	+ 21,000	+ 39,000	+ 1,796,000	+ 4·67
L.N.E.R. ..	+ 18,000	+ 17,000	+ 26,000	+ 61,000	+ 1,727,000	+ 6·22
G.W.R. ..	+ 3,000	+ 11,000	+ 6,000	+ 20,000	+ 469,000	+ 2·87
S.R.	+ 2,000	+ 3,000	+ 4,000	+ 9,000	+ 302,000	+ 2·25

London Transport traffics for the week show an increase of £4,400, and the receipts for the 9 weeks of the financial year are £46,900 up. On the Great Northern Railway (Ireland) there is an increase of £2,700 for the week, of which £2,350 is from passengers. The Great Southern's net increase for the week is £607, there being a small decrease in passengers.

Canadian Excursion Traffic

Our American contemporary, the *Railway Age*, reports an address given by Mr. A. A. Gardiner, Assistant General Passenger Traffic Manager, Canadian National Railways, to the Canadian Railway Club at Montreal on the subject of excursion travel in Canada. After the war, the railways suffered a severe loss of traffic of this class to the private motor car and motor coach, and it was not until drastically cut fares were introduced in 1932 that an improvement set in. The policy adopted was a charge of approximately one cent a mile for short journeys, with a proportionate scaling down for longer distances. The excursions by which this facility first became available were run between Ottawa and Montreal and Quebec and Montreal, and exceeded all expectations, by one carrying 2,932 passengers and the other 3,262, although it was in mid-winter and the depression was at its worst. To-day, excursions are run over such long distances as from Quebec to Chicago at $15 return. From February 6, 1932, the date of the inauguration of the policy, to November, 1933, the Canadian National and Canadian Pacific Railways together carried almost 480,000 passengers, with a combined revenue of over $1,300,000. Costs have been closely watched and are calculated to amount to 45 cents per dollar of revenue. Extra train mileage has often been saved by carrying excursionists on regular services. In attracting passengers, great importance is attached to the provision of cheap meals, and it is believed that the excursions serve to demonstrate the comfort and convenience of rail travel to many for whom it has hitherto been an exceptional experience.

* * * *

Overseas Railway Traffics

All the Argentine railway companies continue to show traffic increases in currency, and the Central Argentine has followed up its previous increases in sterling of £7,947 for the 7th week of the current year and of £13,302 for the 8th week by one of £6,387 for the past week, and has therefore reduced its decrease to date to £88,361. After showing lower decreases in sterling during the previous few weeks the Buenos Ayres & Pacific has for the past week an increase of £845, the first which it has recorded during the current financial year. The average rate of exchange has improved from 17·29 pesos a fortnight ago to 17·17 pesos for the past week. The Canadian Pacific, which has an increase to date of £1,609,800 in gross earnings, secured a net gain of £667,000 for the first seven months of the current year.

Railway.	No. of Week.	Weekly Traffics.	Increase or Decrease.	Aggregate Traffic.	Increase or Decrease.
		£	£	£	£
Buenos Ayres & Pacific	9th	68,957	+ 845	631,624	— 100,070
Buenos Ayres Great Southern ..	9th	120,734	— 9,949	1,118,768	— 289,779
Buenos Ayres Western	9th	39,604	— 4,573	393,585	— 82,241
Central Argentine	9th	128,704	+ 6,387	1,181,024	— 81,974
Canadian Pacific	34th	789,600	+ 84,400	15,771,600	+1,609,800
Bombay, Baroda & Central India	21st	120,600	+ 10,500	3,186,600	+ 134,400

* * * *

Air Conditioning

Few things are as simple as they seem, not even air conditioning in a train. The man in the street probably has an idea that air conditioning means that air drawn in from outside the building or train, is passed through filters to free it from "blacks," is heated or cooled according to the state of the external temperature, is then pumped into the building, and that that is that. Mr. Stuart Miall's informative article in this issue shows that very much more is involved than the simple operations outlined above; indeed the subject has needed, and has received, thorough scientific investigation. Terms such as "relative humidity," and "effective temperature lines," may leave the ordinary man cold (or hot) but each of us knows what we individually mean by a "given degree of comfort." Perspirative activity plays a large part in air conditioning, and the age-old curse upon Adam regarding the sweat of his brow is now receiving sudorific scientific consideration. Truly the railways have a difficult task in tempering the air for the comfort of passengers whose rates of perspiration may vary; in schoolboy language the whole thing seems a frightful sweat, and 98 is a commendably high percentage of success.

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American Sleeping Cars

Sleeping on the train has not hitherto been as comfortable in America as in this country, the curtained bunk system having left much to be desired. However, the tendency is towards improvement, and it appears that the somewhat unpopular, and hence more cheaply priced, upper berth is in greater demand than formerly, owing to the elimination of some of its drawbacks by air-conditioning. But the bunk system itself is being profoundly modified by the substitution of sliding partitions for curtains, and, so far as privacy is concerned, accommodation approaching that found on British trains has been provided on the new high speed streamlined trains for the Union Pacific. The change will be welcomed by the privacy-loving inhabitant of these islands who may have to make a long journey in America, and particularly by the lady traveller. We do not pretend to a profound knowledge of feminine psychology, but we know enough to realise that having tapped timidly on the foundations of the bunk above with a view to interrupting loud snores, a lady of these islands would be mildly shocked to receive in sleepy, but unmistakably masculine, accents a reply taking the form of a refusal to come down and see her sometime. We have personal knowledge of one such incident on an American railway, and feel that the Union Pacific has taken a step in the right direction in abandoning bunks. In matters appertaining to personal comfort civilised people dislike the unorthodox, and the world-wide adoption of sleepers, resembling ordinary bedrooms, will go a long way towards popularising world circuits.

* * * *

A Railway Laundry

Large scale laundering is a comparatively unsung aspect of railway work, but that it is not without its dramatic moments is evident from a study of the routine at Colchester, where the L.N.E.R. takes in most of the washing from the hotels, refreshment rooms, restaurant cars, steamships and so on in its own Southern Area. Bank holiday week-ends and similar rush periods bring in some four or five thousand pieces of linen from the company's Continental steamers on the Saturday morning, all of which have to be returned to Parkeston Quay by a train leaving at 4.45 the same afternoon. Up-to-date equipment gives the Colchester laundry, illustrations of which appear on page 388 of this issue, a possible output of three thousand pieces an hour, or something like six million in a year. British laundry engineers, we understand, measure the capacity of their apparatus by its handling of serviettes and bed sheets, a machine capable of ironing, drying and airing four thousand of the former having a maximum output of only three hundred of the latter. We quote these figures in the belief that they show a nice distinction on the part of the L.N.E.R. between the appropriate relative sizes of these articles which will do much to encourage intending travellers.

Power and Colour Light Signalling at Waterloo

Though Waterloo terminus is in many respects one of the finest stations in the world, its approaches have been determined by the stages in which the predecessors to the present structure were constructed. It has eight running lines but they come in the following mixed order, reading from the south: down-main local, down-main through; up-main relief; up-main through; up-main local; down-Windsor local; down-Windsor through; up-Windsor. The fouling of departure roads by arriving trains that have had to cross them, and *vice versa*, has handicapped the full use of the 21 platform lines and the 13 platforms. That situation has gradually grown worse concurrently with the gratifying increase in the suburban traffic since the electrical services first were introduced in 1916. It has now been decided to remedy this evil and to make the approaches to Waterloo to accord better with the design and needs of the station. The eight running lines are to be re-arranged on the principle of alternating up and down lines, and part of the big scheme is to provide a flying junction at Wimbledon. Additionally to these changes in the track there is to be colour light signalling between Waterloo and Hampton Court Junction and a power-operated box at Waterloo.

* * * *

Automatic Train Control in Germany

The article which we publish in this issue describing the inductive automatic train control apparatus now in extensive use on the German State Railway proves that the Administration of the Reichsbahn, far from being out of date, has made much more progress than many other managements in this important matter. A series of lengthy experiments has been carried out for a number of years past and no effort has been spared to produce apparatus to meet all the requirements of main line working. While the inductive method of transmission between track and train appears to meet with most favour in Germany, experiments have also been made there with other types of automatic train control. On the Berlin Stadtbahn a mechanical train-stop has been installed at practically all stop signals for some time past and has worked most satisfactorily. The optical system of Dr. Bäseler has also been the subject of much thought and experiment. It is now announced that further trials with this system, incorporating several recent improvements, are to be made on lines leaving the Stettin station in Berlin, and some electric motor coaches are, we understand to be equipped for the purpose. This system is already installed between Munich and Regensburg, a distance of 86 miles.

* * * *

The Booster in India

In America, the country of its origin, the locomotive booster has become almost a standard feature of equipment for certain classes of engine and is nowadays regarded as the best available means of temporarily increasing the power of locomotives as occasion demands. There are other countries wherein the application of the device to engines of varying capacities has proved highly beneficial, enabling heavy loads to be hauled over difficult sections unassisted. That, of course, is a great advantage, as a locomotive can often work its train through to destination over long distances where formerly division or an extra engine would have been necessary. An example of this is found in the booster-fitted XD locomotive forming one of a series of seven delivered to H.E.H. The Nizam's State Railway from this country last year. This engine has been in constant service hauling 200 and 300 tons extra load over a ruling gradient of 1 per cent. The normal rated load of an XD engine over this section is 1,000 tons, but the traffic conditions not infrequently involve trains of 1,300 tons loading. This used to involve division of the train, but it has been found that the booster-equipped locomotive can take the 1,300-ton trains right through to their destination without assistance, thus saving the cost of shunting and the use of extra locomotives. An illustrated article dealing with this subject appears on page 381 of this issue.

* * * *

Suburban Tank Locomotives in France

For the haulage of the heavy Paris suburban traffic the French main line railways all use eight-coupled tank engines except, of course, on the electrified sections. On the P.L.M. the 4-8-4 type is standard, and on the others the 2-8-2. We described and illustrated the latest type of 2-8-2 suburban tank engine as used on the Nord in our issue of March 17, 1933. In this issue we give particulars of the 2-8-2 tank locomotives now standard on the Est and the Etat systems. The work these locomotives have to do is arduous, for the all-steel coaches used to form the rush-hour trains weigh empty approximately 500 tons, and, with their complement of 1,500 or more passengers, this may rise to a gross load of 600 tons. The average speeds between the frequent stops are fairly high, and maximum speeds in the neighbourhood of 60 m.p.h. are attained. The three-cylinder simple system is adopted, and, to fill the 20-in. cylinders, a heavy demand is made upon the boiler. Although these locomotives have proved very successful in practice, designs have been prepared for a further batch incorporating a rather larger boiler, and a glance at our illustrated article on pages 385-6 will suggest that this should produce an even better engine. We understand, however, that the matter is in abeyance at the moment, pending a decision on the question of electrification.

* * * *

Attractive Locomotives

For a locomotive to be attractive in an engineering sense, it must exhibit general excellence of design, carefully proportioned component parts and adequate capabilities in performance. At an earlier period in the history of railways, and notably before the rigid economy of present times became compulsory, it was the practice to devote much time and labour, almost regardless of cost, to the adorning of engines. Lining out in two or three colours was freely applied, even the spokes of the wheels receiving individual treatment of the kind, whilst beautifully polished copper or brass coverings were used for the chimney cap and brass for steam dome and safety valve coverings, boiler bands and the beading of splashers. Indeed, in a few extreme cases matters were carried still further, the *tout ensemble* vying with the most ornately finished fire engine ever turned out. That the desirability, if not indeed the necessity, of retaining some at least of these graces of locomotive finish has not entirely vanished is shown by a statement occurring in a brochure issued by a foreign locomotive contracting firm. Herein it is remarked that, as a certain locomotive—which, by the way, was supplied to a South American Government—" will be exposed to criticism on the part of the public, care was taken to give it a pleasing appearance and tasteful light colours, and other attractive features were selected for it."

Alsace-Lorraine Railways

THE railways of Alsace-Lorraine, though owned by the French Government, are operated, with the Guillaume-Luxembourg line of 207 km., from headquarters at Strasbourg, by an administration separate from that of the State Railways. Like the other great French systems, they came into the Convention of 1921, and will benefit from the new legislation which becomes operative during the present year. As the report for 1933 shows, the length of the system in operation at the end of that year, including the Guillaume-Luxembourg, was 2,331 km., as compared with 2,310 km. at the end of 1932. This increase arises from the opening on May 15, 1933, of the Avricourt-Sarrebourg section of the new line which duplicates the Paris-Strasbourg line between Blainville and Sarrebourg. Two local lines, Colmar-Lapoutroie and Colmar-Wintzenheim, totalling 25 km., have also been operated by the administration since January, 1932. There are in addition 101 km. of new lines authorised or under construction. The system includes 1,211 km. of railways built by the German administration between 1872 and 1917.

Earnings in 1932 were again affected by the economic crisis and by intensified road and water competition, but the rate of decrease appreciably slackened, being 4·79 per cent. in comparison with 1932, whereas the 1932 receipts were 16·66 per cent. below those of 1931. Gross receipts in 1933 showed a decrease of fr. 39,945,110, but economies were effected in expenses to the extent of fr. 60,096,111 so that the loss on working was reduced by fr. 20,151,001. There has been, however, the inevitable advance in capital charges, and the final result of the year's working was a deficit of fr. 275,812,828 chargeable to the Common Fund, as compared with fr. 281,507,986 so chargeable in 1932. In passenger receipts there was a fall of 2·9 per cent., due mainly to the development of automobile competition, though at the same time the tourist autocar services organised by the administration have on the whole given satisfactory results. The proportion of higher class passenger traffic to the total on these railways is very low, first class receipts being fr. 23·40, second class fr. 150·09, and third class fr. 826·51 out of each fr. 1,000 of receipts, though the proportion of second class has slightly improved at the expense of the third. Out of each 1,000 passengers only 2·63 were first and 51·36 second, whilst the third were 946·01. Grand vitesse receipts decreased 10·2 per cent., the decline being general in all branches of this traffic except luggage. The total tonnage of petite vitesse traffic was practically stationary, but the receipts were down 5·8 per cent., a fall considerably less than that of 1932 in comparison with 1931, which was 16·8 per cent. The difference in receipts between 1933 and 1932 was due to reduction of tariffs to meet road and water competition and to the larger proportion of low-rated commodities carried. Water competition has seriously increased since the opening of the Moselle Canal. While the tonnage of minerals increased by 1,384,122, of produits metallurgiques by 161,179, of combustibles mineraux by 89,235, and of denrees by 44,663, there were decreases of 245,612 tons in cereals, of 246,038 tons in lime and cement, of 884,512 tons in building materials, and of 134,525 tons in timber.

Of the savings in expenses some fr. 31,511,304 were in payments to the staff, the savings in other directions amounting to fr. 28,584,807. The number of staff employed in 1933 was 13,617 less than in 1921 and 1,538 less than in 1932. Ever since 1921 the administration has been steadily pursuing a policy of economies, which has produced greater efficiency with a reduction of staff. Some of the measures taken were mentioned in connection with the report for 1932 which was analysed in THE RAILWAY GAZETTE of August 11, 1933. The new works in hand include doubling of the lines from Molsheim to Saverne and from Steinbourg to Schweighausen, and the enlargement of Mulhouse-Villa, Reding, and Luxembourg stations, in addition to certain bridge reconstructions, and signalling improvements. From the Orleans Company have been received 10 État type locomotives.

Some operating results are compared in the accompanying table, the rate of exchange being now about 76 francs to the £.

	1933	1932
Passengers	62,675,331	66,198,035
Tons (p.v.)	39,542,489	39,574,004
Average p.v. haul, km.	78·209	79·506
Train-kilometres	27,122,574	27,417,925
Operating ratio, per cent.	111·22	113·10
	Francs	Francs
Gross receipts	793,681,200	833,626,310
Expenses	882,722,851	942,818,962
Loss on working	89,041,651	109,192,652
Passenger receipts	131,803,505	135,730,651
Grande vitesse	32,953,085	36,720,600
Petite vitesse	607,190,377	644,891,865

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Travelling Post Offices

FOLLOWING the opening on September 15, 1830, of the Liverpool & Manchester Railway, the question immediately arose as to whether the new means of rapid transport could be used advantageously for the conveyance of mails. Arrangements were quickly made, and the first rail-borne mail was carried between Liverpool and Manchester on November 11, 1830. This journey was too short to effect any widespread accelerations in mail-carrying and it was not until the completion of the Grand Junction Railway that the advantages became considerable. In anticipation of the opening of that line on July 4, 1837, the Post Office dispatched a mail from London on the night of July 3, which was taken to Birmingham by coach and thence to Liverpool and Manchester by rail. The journey was completed in the unprecedented time of 16½ hours, and the service immediately became popular. At the annual general meeting of the Grand Junction Railway in September, 1837, the directors made a special comment that Liverpool and Manchester had been brought within a night's post of London, " an advantage in which not only the places bordering upon the railway have participated, but others lying considerably wide of, and beyond it; the extent of which accommodation will be best appreciated by the fact that no fewer than about 740 mail bags are taken up and set down every day at the several stations on the railway." It was added that much credit was due to the Post Office authorities for the prompt and efficient manner in which they had adapted their system to the new order of things. Within the next few weeks this promptitude was further demonstrated by the establishment of a travelling post office, the idea of which was first suggested by Frederick Karstadt, son of one of the Post Office Surveyors.

As an experiment a horse box was fitted up temporarily as a sorting carriage and run between Birmingham and Liverpool, for the first time on January 6, 1838. The experiment was considered so successful that on June 19 of the same year it was decided to make the travelling post office a permanent institution. Accordingly, the first sorting carriage to be constructed specially for that purpose was built by the Grand Junction Railway Company. This vehicle, which was about 16 ft. long, 7 ft. 6 in. wide, and weighed just over 4 tons, had the

further distinction of being equipped with apparatus for exchanging mail bags at speed. The appliance was devised by John Ramsey, an officer of the Missing Letter Branch, who was rewarded for his ingenuity by being appointed Post Office Inspector General. Although improved in 1848 by John Dicker, an Inspector of Mail Coaches, the apparatus designed by Ramsey is substantially that in use at the present time. The completion of the London & Birmingham Railway on September 17, 1838, enabled the London and Preston travelling post office to be established, and this still remains as one of the main trunk line services, though now extended to Aberdeen. A further T.P.O. was inaugurated between Rugby and Newcastle-on-Tyne in May, 1845, and was followed by others between Exeter and Bristol, Gloucester and Tamworth, and Chester and Holyhead, the last of which began in March, 1852. At the present time some 73 separate T.P.O.'s, composed of about 156 specially-constructed carriages, now run in Great Britain. Of this number some 90 are fitted with apparatus for exchanging mail-bags with the 132 apparatus stations at present working. The latest type of T.P.O. vehicle is of the kind illustrated on page 387. Shortly after the establishment of the Parcels Post, arrangements were made for sorting parcels on the railway, and the first parcel sorting carriage was placed in service in July, 1885. The T.P.O. staff was composed at first of two special classes of officer, namely "clerks" and "mail guards," the former carrying out the sorting duties and the latter making up, receiving, and dispatching the bags. In May, 1857, ordinary sorters were first employed in T.P.O.'s, and in 1860 the class of mail guard was abolished.

Another feature in the acceleration of mail conveyance by railway was the introduction of the special mail train devoted entirely to this service. Despite much-repeated statements to the contrary, the pioneer in this field was the G.W.R., which had established a night mail train on February 4, 1840, and for which four sorting carriages were ordered in July, 1841. Complaints of the irregularity of the postal service throughout the kingdom culminated in 1854 in an enquiry by a House of Commons Committee, with the result, as far as the G.W.R. was concerned, that the famous Sir Rowland Hill arranged for special trains to be run between London and Bristol from February 1, 1855, exclusively for the use of the Post Office. The train was a very light one, consisting usually of two sorting carriages and a van, worked by one of the old 7-ft. singles. Eleven years later apparatus was installed at Slough and Maidenhead for picking up and delivering bags without stopping, and in June, 1869, the train ceased to be a "special mail" when the Post Office was persuaded to allow one first class coach to be attached. Probably in view of this, it has usually been overlooked by historians and pioneer credit given to the famous "special mail" inaugurated on July 1, 1885, between London and Aberdeen over the L.N.W. and Caledonian Railways. The vehicles for the latter were all built with connecting covered gangways, the doorways of which were sufficiently wide to allow of the transfer of parcels post receptacles. The smoothness, safety, and expedition with which the British railway companies convey mail may truly be claimed to have provided the inspiration and set the standard for the rest of the world, and although the use of the T.P.O. is not confined to Great Britain—it was in general use in Germany, for example, sixty years ago—no other country employs the method to the same extent. Incidentally, when letters were first carried by rail in England, letter-stealing was a capital offence; the last man executed for that crime was hanged on February 13, 1832, and the death penalty was abolished in 1835.

Railway Speed

IN our correspondence columns this week will be found a long letter from our respected correspondent, Mr. W. J. Stevens, in which he comments upon the leading article entitled "High Speed" in our last issue. Unfortunately Mr. Stevens does not seem to have read that editorial very carefully or he would not suggest that we were belittling British railway practice in general when we compared a certain aspect of it with recent developments on the Continent. We are jealous of the reputation of British railways, and therefore feel it our duty to draw attention to possible risks of their falling back unnecessarily in any respect. With our special opportunities of observing railway developments all over the world, we should be failing in our duty were we not to draw attention to what may be learnt from them. Mr. Stevens refers to the British accelerations of 1932 as having been necessary to vindicate the technical efficiency of the British locomotive, and suggests that our statistics tend to show that this was not achieved. We do not think that the accelerations of 1932 were necessary for that particular purpose, which needed no demonstration, but that they were overdue for the purpose of meeting the various forms of competition which had undermined, and tended further to undermine, the passenger traffics of the railways. In that way these accelerations have, as we stated at the end of our editorial, been highly successful. Again, we referred to the scope for high speed railcar services on British railways and pointed to the enterprise of the Continental railways in this direction where fast railcar services contribute quite an important proportion of the high speed mileages.

As to the three points dealt with particularly in Mr. Stevens' letter, No. I implies that the safety and comfort of British railways is on a higher level than that of any other railway system. Comfort is a matter of opinion and requires too much qualification to make reliable comparisons possible. As to safety of passengers, available figures show that there is little to choose between railways generally in well developed countries. Our pages have from time to time testified to the universally high standard of safety attained, not only by British but by Continental and American railways in particular, and figures have been published showing that there is no safer place anywhere than a railway train. To suggest the increase of passenger train speeds at the expense of safety would, of course, be ridiculous and the last thing we would do. There is, however, a wide margin between the present and possible speeds of many trains in this country before any question of risk would arise. Punctuality and reliability is Mr. Stevens' second point, and what he says in regard to it seems to indicate that he is not very conversant with our frequently expressed views upon this matter. We have often said that we place punctuality and reliability before mere speed, and we have shown at the same time that, as a rule, the most punctual trains are the fastest. The experience of habitual travellers at home and abroad is constantly being brought to our attention, and tends to confirm our own impression that punctuality in this country is unfortunately not so high as it is on the Continent. Finally, under No. III of Mr. Stevens' points, it is scarcely credible that anyone could read into our editorial a suggestion that British railways should indulge in "a riot of high speed competition." What we urge is that our railways should exploit their unique capacity for the ocmbination of high speed and almost complete safety to the utmost extent, so as to attract the greatest possible amount of traffic and consequently develop their earning capacity to the utmost.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Standardising Locomotive Boilers

Derby, September 3.

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I notice on page 335 of your issue for August 31 that the South African Railways are arranging to have "as few as seven" standard boilers. If I remember rightly, before the amalgamation in 1923 the old Midland Railway, which had 3,000 locomotives, was well on the way to getting its stock fitted with six standard types of boiler. These would have covered all the locomotives except some taken over from the Tilbury and a few old small engines.

Yours faithfully,

G.7.

"Mileage per Day per Engine on Line"

Ferrocarril Central de Cordoba,
Estacion Retiro (C.C.),
Buenos Aires.
August 14

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—In reference to the remark on page 48 of THE RAILWAY GAZETTE for July 13 under the heading of "Rolling Stock Expenditure for 1935-36" wherein it is stated that "the engine mileage per day per engine on line was 60 for broad gauge railways in India" will you kindly inform me whether "on line" means actually running in service on the line, or whether it refers to the total number of engines in stock?

Yours faithfully,

DONALD M. MACRAE,
General Manager

[The Indian Railways Administrative Report for the year 1932-33, the latest available, gives, on page 17, the following information:—

		Broad Gauge
Average total number (of engines) on line .. steam		5,804
Average number available for use	,,	4,743
Actual number in good repair stored in any one month.	Maximum ,,	764
	Minimum ,,	495
Engine miles per day per engine on line (including departmental) .. .. steam		60

From the wording of this, it appears that the term "on line" means "total in stock" as opposed to "available for use." Incidentally, the engine mileage for metre gauge is also 60 a day and for electric 108.—ED. *R.G.*]

Safe Speeds and Axle Loads on Colonial Railways

Kowloon-Canton Railway, British Section.
Hong Kong, July 26

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I read with great interest Mr. J. C. G. Spooner's letter which appeared in THE RAILWAY GAZETTE of June 22 last.

The principal deterrent to high speed is curvature on account of the restriction in the amount of allowable cant due to practical considerations. There is no doubt in my mind that most railway civil engineers have adopted an ultra-conservative policy when dealing with such an important practical railway problem as safe speed and its relationship to cant. The theoretical formula of mechanics for the determination of cant has become an obsession with most of us, and we have been apt to impose speed restrictions on curves on the slightest provocation.

It is very difficult to lay down hard and fast rules governing speeds on curves, the determining factor being the standard of maintenance. I am of opinion, however, that a radical departure from the theoretical cant formula would result in smoother and faster running and less wear to rail and rolling stock. Alignment and level are of paramount importance when trains are run at speed. There are always irregularities present in the track, especially on Colonial railways where the labour and supervision are not first class. The best and easiest way of obviating excessive irregularity on curves is to reduce the cant.

The problem to be solved is to determine the amount of unbalanced elevation which is safe for the sharper curves, unbalanced elevation being the difference between the cant as calculated by the theoretical formula and the practical cant which is proposed for a curve. It is suggested that unbalanced elevation to the following extent should be allowed:—

Gauge	Safe Unbalanced Elevation
4 ft. 8½ in.	2¾ in.
3 ft. 6 in.	2 in.
Metre	1¾ in.

It is further suggested that the following practical formulæ should be used to determine the practical cant for curves sharper than 2 degrees (2,865 ft.):—

Gauge	Practical Cant in in.	Maximum Allowable Cant in in.
4 ft. 8½ in.	$\frac{V^2D}{2,500}$	5 in.
3 ft. 6 in.	$\frac{V^2D}{3,000}$	3½ in.
Metre	$\frac{V^2D}{3,300}$	3 in.

V = speed in m.p.h.
D = degrees of curvature.

It is intended that the speeds should be restricted on curves sharper than 2 degrees (44 ch.) when the difference between the cants as calculated by the theoretical and practical formulæ exceeds the safe unbalanced elevations given above. With the practical cants as given, the following speeds are allowable with 4-degree (1,433 ft. rad.) curves:—

Gauge.	M.p.h.
4 ft. 8½ in.	56
3 ft. 6 in.	51
Metre	49½

These speeds, it is considered, are safe provided the road-bed is reasonably hard and there is an adequate amount of stone ballast.

Yours faithfully,

R. D. WALKER,
M.Inst. C.E., Manager and Chief Engineer

Railway Speed

Stock Exchange,
London, E.C.2.
September 4

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Many readers of your editorial in your last issue, and the accompanying article entitled "European Express Train Services, 1934," must have wondered whether you had joined the ranks of the speed maniacs! Speed is only one of various important considerations relating to efficient railway service, and it was probably right for the British railways to indulge in what you describe as the "wave of acceleration" in 1932. This was necessary in order to vindicate the technical efficiency of the British locomotive,

and in spite of your statistics, I venture to suggest that this end was not only accomplished but is being successfully maintained. May I respectfully suggest that you have left out of account the relative mileage of the British and Continental railway systems, as well as the considerable addition to the Continental high speed mileage represented by different forms of railcar services which are not strictly comparable, and that in your particularly uncomplimentary reference to the Southern Railway you have left entirely out of account congestion of traffic in the London area which must always be a factor in relation to its long distance services? The Southern Railway can no doubt defend itself, but, as a daily traveller on the system, I should like to testify to the great improvement in the punctuality and speed of the local services in recent years.

But, as already pointed out, speed is by no means the only consideration in comparing British railway service with that afforded by the Continental systems. The following aspects must surely be taken into account:—

I. Safety and comfort.
II. Punctuality and reliability.
III. The commercial aspect.

Regarding *No. I*, I suppose the position of British railways remains unchallenged in comparison with any other railway system, and more markedly so in connection with road and air services. The very high standard our railways have set themselves in this respect creates it own difficulties for their managers. It was an unfortunate psychological outcome of nearly 100 years of monopoly that the railways were very late in realising the importance of publicity, and the necessity to emphasise their duties as servants of the public. Thanks, among others, to THE RAILWAY GAZETTE these disadvantages are being reduced, but it would be wrong to say the general public, the Press and even Parliament are as yet "railway-minded" in the same sense as they are "road-minded" and even "air-minded." What is the result? Any falling away from the high standard of "safety first" on the part of the railways would receive, and does receive, condemnation on the part of the said public, the Press and Parliament, whereas the same authorities are only too ready to condone the really appalling tragedies represented by loss of life and injury associated in a growing degree with road and air travel.

Regarding *No. II*. From the point of view of the public, speed has possibly come to have an exaggerated value in comparison with punctuality and reliability. In other words, a very large percentage of the public are more concerned that a train should arrive on time on a reasonably good time schedule than that it should be a few minutes late on a more spectacular timing. In practice, many of our express services are so timed that losses arising from traffic and weather conditions are capable of being recovered, and are frequently recovered in an effort to maintain greater punctuality. Every-day observation shows that the old motto that "time is money" has very little relation indeed to the craze for speed on the roads and even in the air, and that the speed aspect only attains importance in a minority of cases of real emergency.

In relation to *No. III*, the commercial aspect of affairs, it would be unfortunate if, as a sequel to the struggle to reduce working expenses, British railways were to be involved in a riot of high speed competition which would render little service to the public and be extremely costly during the "peak" months of passenger traffic. The railways have rendered many services to the nation without expectation of reward, but the greatest service they could render at the moment would be by continued economy to restore the dividends of various trustee stocks, authorised by Parliament, which have been in default, and which the progress of recovery has, so far, done little to replace.

In conclusion, I hope you would scarcely venture to combat the view that, taking the elements of speed, safety, and efficiency to the public into account, British railways certainly do not occupy that somewhat inferior position to which you relegated them in your last issue.

Yours faithfully,
W. J. STEVENS

[We comment on this letter editorially on page 371.—ED. *R.G.*]

Excursion from Scarborough to King's Norton

London & North Eastern Railway,
York, September 3

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—My attention has been drawn to a column on page 340 of THE RAILWAY GAZETTE of August 31, referring to the alleged incorrect labelling of an excursion train from Scarborough. The facts as given by your correspondent are not quite correct as there was an excursion from King's Norton to Scarborough in connection with the Birmingham holidays which returned from Scarborough on Saturday, August 11, and the carriages were correctly labelled in accordance with the notice printed in THE RAILWAY GAZETTE.

A mistake was, however, made the following day, Sunday, August 12, when one of the station staff at Scarborough incorrectly labelled a train leaving Scarborough at 10.5 a.m. for York with some of the King's Norton labels which had been left over from the previous day. Some of the passengers travelling in the Scarborough-York train were going to King's Cross, hence Mr. Sekon's assumption that King's Norton had been written in error for King's Cross.

Yours faithfully,
THOMAS J. HORNSBY
Divisional General Manager,
(North Eastern Area)

PUBLICATIONS RECEIVED

The Railway Handbook, 1934-1935. London: The Railway Publishing Co. Ltd., 33, Tothill Street, Westminster, S.W.1. 8½ in. by 5½ in. 96 pages. Price 2s. 6d.—That there is much information relating to railway practice, history and operation which falls outside the scope of the ordinary general text book was evidenced by the publication for thirty-five years of *The Railway Year Book*. Here the student could supplement the knowledge gleaned from other works by having at hand a more specialised source of reference to the individual affairs of the various companies. The amalgamation of *The Railway Year Book* with *The Universal Directory of Railway Officials* last year provided at 20s. per annum what is probably the most complete railway reference book ever compiled, but there appeared to be a need for a handbook, more within the means of the railway student, containing brief particulars of the British and Irish railway systems, together with much of the statistical and other information so long provided by *The Railway Year Book*. It is to meet this need that *The Railway Handbook* has been produced. Brief histories are given of the group companies, London Transport and the more important Irish systems, together with a considerable quantity of statistical and general matter relating to the railways of Great Britain and the Irish Free State. Details of foreign railways are introduced mainly for purposes of comparison. The steam locomotive, electric traction developments, rolling stock, modern signalling practice and permanent way are all separately treated, and the relative merits of steam, electricity and the diesel engine as sources of motive power are concisely presented. An explanation of the methods of classifying electric locomotive wheel arrangements is a useful conclusion to a book which fills in gaps in the average railway students' knowledge.

Reinforced Concrete Columns.—Bulletin No. 267, "An Investigation of Reinforced Concrete Columns," by Frank E. Richart and Rex L. Brown, has been issued by the Engineering Experiment Station of the University of Illinois. For a limited time, copies of Bulletin No. 267 may be obtained without charge by addressing the Engineering Experiment Station, Urbana, Illinois.

THE SCRAP HEAP

French railway locomotives are to whistle only when it is absolutely necessary. Not, as hitherto, from sheer *joie de vivre.—From "Punch."*

* * *

The railway goods classification, indispensable, incomprehensible, irritating, irrational, and, perhaps, "impossible"—according to the point of view, yet has general interest and a lighter side. Glance at the following extracts:—

Balls, wooden, for throwing at cokernuts.
Crinoline steel.
Carpet bags.
Cap peaks, oily—as Dangerous goods.
Crack shots—as Dangerous goods.
Coffins.
Fish sounds, dry.
Limpets.
Machinery—Fire engine.
Firewood chopping.
Punching bears.
Bell ringing.
Mistletoe (carriage to be pre-paid.)
Negro powder No. 2—as Dangerous goods.
O.K. powder—as Dangerous goods.
Paper collars, cuffs and shirt fronts.
Passover cake.
Pianos, silent, teaching and practice.
Riddles.
Sarsaparilla—as Drugs.
Ships' knees.
Snuffers.
Trivets.
Warming pans.
Woad.

What a find for the antiquary of a later age! The survival of old pastimes, costumes and customs; the modern gunman; the race problem; the movement to reduce undue noise; medical practice and the widespread habit of drug-taking; the reflection of hard times in the economy in linen, opposed to the pride of appearance indicated by the use of hair oil even by the cap-wearers; the mechanical age; all would be deduced by an intelligent and imaginative mind. But would not "Fish Sounds" provide a teaser!

* * *

A TRAIN AT A CARNIVAL

A railway tableau won a first prize at the Dovercourt Carnival this year the date of which coincided closely with the eightieth anniversary of the opening of the Manningtree to Harwich branch of what was then, in August, 1854, the Eastern Counties Railway. By courtesy of the *Harwich and Dovercourt Standard* we reproduce a photograph of the exhibit, which took the form of a model of an excursion train run from Norwich to Dovercourt in 1856. A number of synthetic nineteenth century excursionists rode in the coach behind the locomotive. The tableau was the work of Fisher and Woods, a local firm, and considerable research was involved in the production of the model. Some interesting details have been supplied by Major Carlyon-Hughes, who tells us that a brass plate lettered "E.C.R." on the side of the engine was taken from an old shunter's lamp. The inscription in front of the chimney reads: "Excursion. Norwich to Dovercourt (New Town). 1856."

Model of early train to Harwich which won a first prize at a recent carnival

* * *

"Potatogram" is the latest means of communication, and the trans-Australian railway line takes the credit for its invention. An old prospector walks two or three miles to the line to await letters and papers from Kalgoorlie. As the train does not stop at this point, difficulty has been experienced in delivering the mail. Now a slit is made in a potato, a letter or paper is inserted and the mail thrown from the train. The old fellow is delighted with the idea. He always eats the potatoes.—*From the "Liverpool Post."*

* * *

THE JEWELLER'S WATCHMAN

In our issue of May 18 last we published on this page a problem then recently set in an examination to one hundred police officers. They were asked to justify the dismissal of a jeweller's night watchman who had saved his employer's life by a fortunate dream, and only three candidates answered correctly. Mr. S. G. N. Shaw, Senior Assistant Manager, Bombay Port Trust Railway, now presents us with some interesting statistics gathered by confronting various classes of person with the same riddle. The Indian Army, represented by one Infantry Officer P.S.C. and three R.A.M.C. Officers, made a gallant attempt which would also have been glorious had not all four replies been incorrect. Readers of the Children's Corner of *The Times of India* made a better showing than constabulary or military wth twenty-seven correct answers out of an entry of 320—something over eight per cent., but when six railway officers were similarly questioned no less than fifty per cent. solved the mystery.

* * *

JUST SWANK

A to B: "I was at Oxford, y'know."

B to A: "Really, how interesting; how long were you there?"

A to B: "Oh, about half-an-hour; arrived 12.21 from Brum and left at 12.50 for Paddington."

* * *

NIGHT SILENCE REVELATIONS

A railway official, describing the new night silence plans to an *Evening Standard* special correspondent on Wednesday, made the statement that "The felt pads in the chairs of sleepers should produce still less noise when a train passes through a sleeping town."

The padding in the chairs of these unfortunate persons, of course, causes so much disturbance when there are no trains running.

He went on: "We are also building cork floors in sleeping coaches to reduce the noise from the point of view of the occupants."

So that the sight of the noise shall not awaken them?

Material for the Scrap Heap!

OVERSEAS RAILWAY AFFAIRS

(*From our special correspondents*)

Competitive examinations for Engineering and Traffic Officers' appointments, also new diesel railcars in India—Pan-Pacific travel—Labour troubles in Argentina—Interesting South African construction work—Speeding up American freight services—Further new Chinese railways

INDIA

Recruitment to Superior Railway Services

A competitive examination will be held at Delhi on January 4, 1935, concurrently with the I.C.S. examination for the admission of seven candidates in the Transportation (traffic) and Commercial Departments of the Superior Revenue Establishment of the Indian State Railways. A similar open examination for the recruitment to the Indian Railway Service of Engineers and to the Superior Telegraph Engineering and Wireless Branches of the Posts and Telegraphs Department will take place on and from November 7, 1934. Both examinations will be directed by the Public Services Commission.

Steel Industry Protection

In its report on the continuation of protection for the iron and steel industry in India, the Indian Tariff Board has recommended protection on a modified scale for a further seven years. A lower scale of protective duties is suggested and, in view of the operation of the Ottawa pact, duties on British manufactures are scheduled at a lower figure than on iron and steel of non-British origin. In the interests of the re-rolling mills, certain items of British manufacture are recommended to be admitted duty free. Special recommendations are made for specific railway materials, of which the local industry has been supplying a very large percentage of the country's demand. The board proposes that the Railway Board should enter into an agreement with the local industry, under which orders for the requirements of the Indian railways in rails and fittings should be placed at reasonable prices with local manufacturers up to the maximum productive capacity of the local industry. As the import prices of rails and fishplates at ports are higher than the reasonable prices recommended, no protection is considered necessary for these items. It is proposed that the Government should have powers to vary the import duties in accordance with changes in import prices or in the manufacturing and transportation costs of the local industry.

In view of the reduced revenue from customs duties resulting from the lower level of duties recommended by the Tariff Board, the Bill just introduced in the Assembly to implement the Tariff Board's recommendations provides for the levy of an excise duty of Rs. 4 a ton on all steel ingots produced in British India. There will be a countervailing import duty ranging from 33 to 50 per cent. above the excise duty. Additional specific duties are provided for imports of iron and steel of non-British origin.

Trade at Kathiawar Ports

The statistics of foreign trade at the Kathiawar ports in 1933-34 reveal a serious diversion of overseas traffic from Bombay. The total imports from foreign countries, excluding coastal imports, during the year were valued at Rs. 418 lakhs, against Rs. 276 lakhs in 1931-32. The import trade at Bhavnagar alone increased from Rs. 76 lakhs in 1931-32 to Rs. 230 lakhs in 1933-34. The export of raw cotton from Bhavnagar rose in value from Rs. 3 lakhs in 1931-32 to Rs. 97 lakhs in 1933-34. While Indian railways as a whole are not much affected by the diversion, State railways lose the portion of freight receipts credited to railways owned by Indian States by reason of the diverted trade being distributed from the Kathiawar ports in place of Bombay.

First Railway Sales Manager

With the approval of the Railway Board, the North Western Railway has recently created the post of Sales Manager attached to its Commercial Department. The functions of the Sales Manager will be to examine possibilities of new traffic and to devise ways and means for recovering lost traffic. Mr. C. D. Jordon, who has been appointed to this new post, has already completed a preliminary survey of his duties, as a result of which a notification headed "Lost Traffic, Reason No. 1" has been issued under the signatures of the Chief Commercial Manager and the Chief Operating Superintendent. The notification states that a good deal of traffic has left the railway and taken to the road on account of (*a*) the inattention and impoliteness of staff dealing with the public; and (*b*) the lack of expeditious despatch and movement of traffic from stations, and the delay in placing goods and wagons at the disposal of consignees at destination. Moreover, the allegation has been made that malpractices on the part of some members of the railway staff have made it cheaper for merchants to despatch goods by road. The railway administration will, in future, view such complaints as the cumulative result of long-standing grievances, and will not accept the usual excuse of personal animosity that has frequently been made in the past.

Diesel Electric Railcars

The six diesel-electric railcar chassis and power units that were on order for the Madras and Southern Mahratta Railway have arrived and will shortly be put into service in the Godavari District. These were briefly described on page 893 in THE RAILWAY GAZETTE of May 18 last, and the sanction for the purchase was also recorded on page 207 in the issue of February 9, 1934. They have been constructed by Sir W. G. Armstrong Whitworth & Co. Ltd. It is understood that the South Indian Railway also proposes to introduce a diesel-electric service between Tambaram and Conjeeveram as an extension of the Madras-Tambaram electrified service.

NEW ZEALAND

Widespread Scheme for Promoting Travel

Plans for a Pan-Pacific conference to discuss the formation of a big united travel organisation for Australia, New Zealand, Fiji and Honolulu, and embracing, perhaps, other Pacific islands, were outlined in Brisbane last month by Mr. H. H. Sterling, Chairman of the New Zealand Government Railways Board, who has just concluded a tour of Australian railways from Perth to the Atherton Tableland in North Queensland. Mr. Sterling said that the time was ripe to swing the general trend of world travel towards the Pacific. He considered that the first essential was the creation of an efficient organisation representative of the various States and countries concerned. It should embrace a good deal more than the activities customarily allotted to the government tourist bureaux. It would require not only to take cognisance of publicity and bookings, but generally to supervise the wellbeing of travellers from the time they entered the area embraced by the organisation until they left it again. Such an organisation, said Mr. Sterling, would ensure smooth working and proper standards of travelling service. The traveller would be well cared for by such an organisation and would be sold everything necessary or desirable for his tour, thus adding to the national income. It is expected that rapid development of the scheme will take place.

Rent of Railway Houses

An interesting decision, arising out of an Act passed in 1932 to effect a

general reduction in rents throughout the Dominion by 20 per cent. (following or accompanying percentage reductions of wages), has just been announced, as the result of an appeal by railwaymen regarding the rents they pay for railway houses. There are, in New Zealand to-day, 3,505 houses occupied by employees owned by the Railway Department, and originally representing a capital expenditure of £2,000,000, which has since been written down to £1,600,000. The judgment of the Court lays it down that Part III. of the National Expenditure Adjustment Act, 1932, which provides for a reduction of 20 per cent. in rents, applies to houses owned by the Railway Department and occupied by its servants.

One of the contentions of the Railways Board was that the legislation applied only to contract for payments of rent, and that where the dwellings were occupied by employees for the more efficient performance of their duties, there was no tenancy and the money paid was not rent. The railwaymen, therefore, were not tenants of the Department if they were occupying the dwellings for the efficient performance of their duties. On behalf of the men it was submitted that the relationship of landlord and tenant did exist. Even, however, if it did not, it was argued that the statute still applied because there were, between the department and the men, contracts under which the men undertook to pay rent.

Branch and Main Line Trains Collide

An accident to passenger trains, fortunately free from serious personal injury, occurred on June 2 near Sockburn, in the Christchurch (South Island) suburban area. The Little River branch train crashed into the rear of the north bound main trunk express, the engine telescoping a luggage and goods van, smashing other vans slightly, and doing a considerable amount of damage. None of the passengers or crew of either train was injured seriously, and the permanent way was not damaged. The collision, it appears, was due to an unusual sequence of events, namely, (1) the express made an out-of-course stop on the main line, owing to a defect having developed in the engine; (2) visibility on the night in question was very bad, due to thick drizzle; and (3) one of the automatic signals failed to show its distinctive light, though the signal immediately preceding it was in the caution position, thus warning the driver of the Little River train that the section on which the express had stopped was occupied. The rule is, of course, quite definite that in the event of there being no signal where a signal should be showing, the position must be regarded as one of danger and the necessary steps taken accordingly. Commenting upon the accident the Chairman of the Government Railways Board, Mr. H. H. Sterling, said, "Railways all over the world have spent very large sums of money in installing signalling systems, the main object of which has been to reduce the influence of the human factor to the lowest possible degree. It has not yet been found possible, however, to devise anything that will entirely eliminate this factor, and it has to be admitted that the failure of this factor in the present case led to the accident."

CHILE

Funds for Railway Construction

The Chilean Minister of Production has signed a decree authorising the Director-General of Public Works to draw on the National Treasury for the amount of 1,100,000 pesos (approximately £22,700) to be expended in the continuation of the work on the Antofagasta-Salta Railway and the Las Raices tunnel on the Lonquimay (southern Transandine) line. Of this sum, half a million pesos have been earmarked for the Antofagasta-Salta railway.

Arica-La Paz Railway

According to intelligence from Santiago de Chile, negotiations are in progress between the Chilean and Bolivian Governments with reference to the agreement at present in force between these two Republics in regard to the administration of the above line, which is due to terminate on September 30 this year. The Bolivian Government is reported to be in favour of continuing the convention for the international working of the line on its present basis; but it is stated that the Chilean authorities are desirous of making certain modifications in the agreement, and the Chilean Minister at La Paz has been instructed to approach the Bolivian Government in the matter.

ARGENTINA

Argentine State Railways: Proposed New Lines

The Argentine Ministry of Public Works has sent a message to Congress soliciting authority for the construction of a railway to connect the towns of Neuquen, in the territory of the same name, and Bariloche, situated at the head of Lake Nahuel Huapi, in the Territory of Rio Negro, with, in addition, a branch line from Paso Limay to Paso Flores. A Government decree authorises the sum of $350,000 paper to be spent on the necessary surveys for the work.

"Go-Slow" Movement on B.A. & Pacific Railway

During the last few days of July and the first week of August a "go-slow" movement was started on a section of the B.A. & Pacific Railway by way of protest against the continuation of the wage reductions put into force by that company some months ago. Although the movement was confined to a small section of the employees, it was sufficient to disorganise working very considerably, more especially in connection with the handling of grain traffic. The two labour unions, La Fraternidad and Union Ferroviario, disclaimed all responsibility for the movement, and the Director-General of Railways was compelled to intervene in the matter. After an investigation of the circumstances, the Government ordered the railway company to take steps to normalise the service within 12 hours, on the termination of which period they were authorised to dismiss any employee found guilty of obstruction, and communicate their names to the authorities to be dealt with in accordance with the law providing for such cases.

General Railway Labour Unrest

[The still-unsettled dispute regarding the restoration of wage cuts was dealt with on page 219 in THE RAILWAY GAZETTE of August 10. Owing to the importance of the question, a further report upon the situation is published at some length on page 391 of this issue.—ED. *R.G.*]

SOUTH AFRICA

Mimosa-Alicedale Deviation

Act No. 43 of 1931 authorised the construction of deviations on the Cape Midland main line between Mimosa and Sandflats and between Sandflats and Alicedale. The section between Mimosa and Sandflats was opened for all classes of traffic on August 6, 1933, and it is anticipated that the final section, namely from Sandflats to Alicedale, will be opened very shortly. The old route involves the use of 1 in 40 grades and sharp curves necessitating considerable banking of trains and loss of time, whereas the new route follows the valley of the Bushmans River and almost entirely obviates the rise and fall of the present line, is shorter by 1¼ miles and the maximum gradient is flattened to 1 in 80, with the result that it will be possible to haul a uniform load from Port Elizabeth to Alicedale without interruption.

Heavy Construction Works

The Mimosa-Sandflats section did not present any natural construction difficulties, but on the Sandflats-Alicedale portion fairly heavy work is encountered at about four miles from Sandflats, where the line enters the valley of the Bushmans River and descends for a further 4½ miles to the first crossing of the river. The river is crossed at this point in order to maintain a fairly straight course for the remainder of the line. The course of the river is very tortuous, and a great saving in distance is achieved by crossing the river and tunnelling, 1½ miles further on, through a projecting ridge, round which the river winds its way for several miles. After passing through the tunnel (4 miles from the end of the new line) the river is

crossed three times in order to maintain a direct route and also to avoid difficult and dangerous ground which would be traversed if the valley were followed. The four bridges are composed of a combination of 100 ft. and 50 ft. steel spans, and 20 ft. concrete arches provide from 180 to 280 ft. of waterway, and are from 30 to 45 ft. in height above the river bed.

All the bridge substructures were completed during 1933 and the major portion of the work on the tunnel was done during that year. Good progress was also made with the erection of the steel spans, commencing with No. 4 near the junction at Alicedale Poort. A connection was made with the main line at this point, and the rails have been laid and the bridges erected telescopically from it. In constructing the tunnel, which is 274 yd. in length, headings were driven simultaneously from both ends.

A feature of the new line, which will improve working conditions in this locality, is the provision of a locomotive water supply between Sandflats and Alicedale, water being drawn from the Bushmans River. Under present conditions there is a considerable traffic in travelling tanks between Sandflats and the South, which will be obviated when the new line is completed.

Railway Concessions

Important travelling concessions to children are announced. Children up to the age of seven, accompanied by an adult, will travel free. From seven to 16 years they will pay half fare, whether on ordinary tariff or excursion fares. School-children from 12 to 16 will pay half excursion rates. Previously only children up to the age of three years were permitted to travel free on the railways, while the half-price rate applied only to children from three to twelve years.

After three years' service, white labourers will get seven days' continuous leave on full pay. This will be in addition to the five single and isolated days which they get throughout the year at present. European labourers who occupy railway houses, and who pay rent based on their income, will, in future, not be charged rent for these houses while they are on leave without pay, providing their absence does not exceed 14 days. Married men who now receive 1s. a day house allowance will have this amount increased to 1s. 6d.

POLAND

Reorganisation of Transport Authority

The Polish Ministry of Communications has been reorganised, and under the direction of the Minister there is now a council composed of representatives of seven Government Ministries, of the largest Polish towns and districts, and of the leading industrial and commercial, railway, road transport, aviation, and waterways groups. The Minister of Communications has appointed 15 technical members to advise the council, and five subcommittees have been set up to cover the various phases of railway operation. One of these is charged with the task of co-ordinating rail, road, air and water transport, and has already instituted a number of railway-worked road services in east and north-east Poland.

1933 Railway Results

During 1933 the Polish State Railways carried 99,250,000 passengers, a decrease of 12 per cent. compared with 1932, and 41,650,000 tonnes of goods, an increase of 1 per cent. At the end of the year the stock included 5,740 locomotives, 12,185 passenger vehicles (of which 306 were of the all-steel type), and 163,584 wagons.

ALGERIA

State Railways New Works

A sum of 680 million fr. has been allotted by the Algerian State Railways for various works during the fiscal year 1934-35. The construction of new lines will account for 330 million fr., the doubling of lines (including the Algiers-Oran and Algiers-Constantine sections), 150 million fr., and further electrification, 200 million fr. The latter item refers to the Duvivier-Guelma line, which forms part of the main Morocco-Algiers-Tunis trunk railway.

UNITED STATES

Fast Freight Trains

American railways like those on other Continents have, in the course of seeking means wherewith to combat fast road freight traffic, now resorted to the running of a number of express freight trains between selected centres. In this way, even over distances up to 400 miles, next morning delivery is assured.

The first line to adopt the fast freight policy was the Missouri-Kansas-Texas Railroad, serving several of the central and southern States, but since August 6, four railways—the Chicago & Northwestern, the Chicago, St. Paul, Minneapolis & Omaha, the Chicago, Burlington & Quincy and the Chicago, Milwaukee, St. Paul & Pacific—running between Chicago and St. Paul and Minneapolis, have each instituted a daily "fast freighter" in each direction which, instead of taking 22 hours as heretofore, now covers the intervening 400 miles in 11 hours. This is achieved by reducing terminal delays and by increased running speeds, made possible by the use of passenger locomotives and coaching van, or "express car," stock and by limiting loads to 25 or 30 cars.

Though road motors have the advantage of direct door to door service, they take from 4 to 13 hours longer on the way. The express freight trains carry less-than-carload consignments at very low rates and facilitate quick merchandise turnover and hand-to-mouth buying. The principal gain in the new service is that whereas, on the Omaha road for instance, Chicago was left at 9 p.m. and St. Paul reached at 7 p.m. the next day, the "express freight" now leaves at 6.40 p.m. and is in St. Paul by 5.40 next morning, securing a whole 24-hr. earlier delivery, a full business day's saving in the receipt of each consignment.

THE FAR EAST

More New Railways opened

The Tungkwan-Weinan extension of the Lung-hai Railway was opened for traffic on July 1. When the road bed has settled down it is intended that an express service will be run to Weinan.

On July 1, also. the Taiyuan-Kiehsiu section of the projected Tatung-Puchow Railway was inaugurated. Work continues on the further extension of the line of which it forms the southern section, between Kiehsiu and Hungtung, where detachments of soldiers are employed upon the earthworks. When completed, this railway will open up a large tract of new country and traverse the Province of Shansi. Construction work upon the Yushan-Nanchang Railway [mentioned in THE RAILWAY GAZETTE of August 31] was formally inaugurated on July 8 in the presence of an influential assembly.

New Trunk Route

The *Chinese Economic Bulletin* understands that the National Reconstruction Commission intends to construct a trunk line from Nanking to Chaoan in Southern Fukien. It will be 1,200 km. in length and be divided into five sections, Nanking-Wuhu, Wuhu-Sunkiapu—part of the newly-constructed Wuhu-Chapoo line—Sunkiapu-Kiangshan, Kiangshan-Yenping, and Yenping-Chaoan. The estimated cost of construction is $30,000,000.

Proposed Branch to Kietyang

Reports from Swatow indicate that a new branch line of the Swatow-Choa-chowfu Railway to the city of Kietyang—the first section of the proposed trunk route through the Hakka country to link up with a main line in Kiangsi—has been sanctioned by the Ministry of Communications in Nanking after a very comprehensive survey. The estimated cost is $2,000,000, according to *Eastern Engineering and Commerce*.

Sleeping Cars for All Classes

Since July last the Hangchow-Kiangshan Railway, locally known as the Hang-Kiang, has been running first, second and third class sleeping cars, upon this line, which, as reported in THE RAILWAY GAZETTE of March 23 last, is now open from Hangchow to Yushan. [As mentioned on page 360 of our last week's issue, this is also part of the proposed trunk line which will connect Canton with Shanghai via Nanchang.—ED. *R.G.*]

THE LOCOMOTIVE BOOSTER IN INDIA

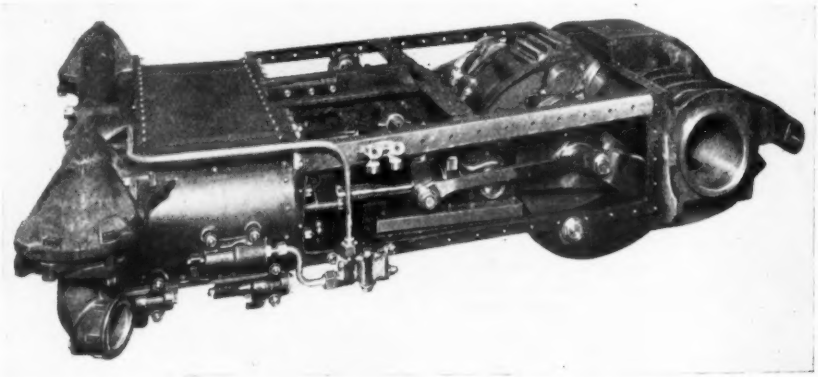
Results obtained with an XD standard locomotive built by the North British Locomotive Co. Ltd. for H.E.H. The Nizam's State Railway

ON pages 450 and 451 of THE RAILWAY GAZETTE dated March 31, 1933, there appeared an article illustrating and describing one of an order for seven 2-8-2 type engines which had recently been constructed for H.E.H. The Nizam's State Railway by the North British Locomotive Co. Ltd. to the requirements of the railway officers in India and the consulting engineers, Sir Douglas Fox & Partners, London. In general construction these engines follow closely the Indian Standard Committee's 2-8-2 XD class design, but some modifications were made to meet the particular service conditions of the railway.

The design incorporates two outside cylinders, 22½ in. diam. × 28 in. stroke. Other dimensions are as follow:—

Wheels—	
Coupled, diameter	5 ft. 1½ in.
Leading truck, diameter ..	3 ft. 0 in.
Trailing truck, diameter ..	3 ft. 7 in.
Wheelbase—	
Rigid	17 ft. 3 in.
Total (engine) ..	35 ft. 0 in.

The boiler carries a working pressure of 180 lb. per sq. in. and the total heating surface with superheater amounts to 2,716 sq. ft. with a grate area of 45 sq. ft. The tractive effort at 85 per cent. of the boiler pressure is 35,260 lb.



As stated in the article referred to, one of these locomotives was equipped with a booster engine operating on the trailing radial axle, and by means of this the available tractive effort at low speeds could be increased by from 7,000 to 10,000 lb.

The booster was constructed by J. Stone & Co. Ltd., London, as was also the feed water heater with which the locomotive is equipped. A mechanical stoker, manufactured by the North British Locomotive Co. Ltd., is also installed on this and another engine of the same series.

In a communication we have recently received from J. Stone & Co. (India) Ltd., Bombay, it is stated that the locomotive, since its construction, has been in constant service hauling 200 and 300 tons extra load over the ruling gradient of 1 per cent. between Kazipet and Secunderabad. The normal rated load of an XD engine over this section is 1,000 tons, while the loads offering from the collieries at Singareni and Ballampalli, plus the normal run of freight, involve trains of 1,300 tons. In order to take this freight through to Secunderabad and Wadi, the train has normally to be divided at Kazipet, but the use of the booster engine makes it possible to take the 1,300 ton trains right through to their destination without entailing the cost of shunting and the use of extra locomotives. It is thus seen that the one booster alone saves one complete train in every four operated, assuming a sufficient accumulation of traffic for a daily train.

The booster is made in two main sizes, one for broad (5 ft. 6 in.) or standard (4 ft. 8½ in.) gauge, and the other for 3 ft. 6 in. or metre gauge, while cylinder dimensions are carefully considered to conform to the capacity of the boiler: for instance, the cylinders of the booster engine were at first machined to 8½ in. diam., but in operation it was found that the extra exhaust from the booster cylinders passing into the main blast pipe increased the smoke-box vacuum by about 2 in. The effect on the evaporation was immediate and the cylinders were then bored out to 9 in. in order to get the benefit of the extra tractive capacity made possible.

CONTAINERS IN ITALY.—Accompanied by the Minister of Communications, Signor Puppini, and the General Manager of State Railways, Signor Velani, Signor Mussolini, the other day, visited the precooling plant for refrigerator containers at the San Lorenzo goods station at Rome. He was keenly interested in this method of refrigerated transport and the details of precooling, loading of the containers on the trucks, and hauling of a container by a small motor tractor. A description of these containers appeared in our issue of July 2. On the following day Signor Mussolini watched from the windows of his office in Palazzo Venezia some experiments carried out by the State Railways with an ordinary 10-ton goods van loaded on a low 4 bogie truck with 16 tyred wheels and hauled by a tractor through the streets of Rome. The purpose of this experiment was to show the possibility of transporting loaded trucks by rail and road without transhipment of the goods.

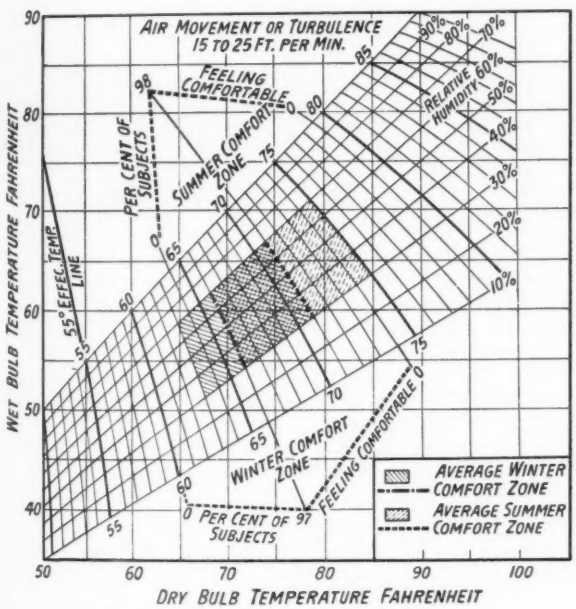
THE DISAPPEARING HORSE.—An interesting sidelight on the rapid mechanisation of railway cartage methods was shown during the hearing of the application of the London Midland & Scottish Railway for licences in the Liverpool area. For the railway it was stated that of the "discretionary" vehicles, 33 were to be acquired to replace horse teams, and 2 lorries and 3 trailers were required for increasing business. Four vehicles had been acquired for increasing business and six to reduce overtime.

AIR CONDITIONING OF TRAINS—II*

Describing an American study of the traveller's susceptibilities

By STUART MIALL, B.Sc.

WHERE increased passenger comfort is the aim of equipping a carriage with additional appliances, it is sometimes possible to specify what is required without making any but the simplest of preliminary investigations. Thus adjustable windows may be selected with reference to their ease of operation, their ability to withstand usage, and the probable expense of their upkeep. Rather more is involved when improvements in lighting, warming or ventilating are contemplated, but the full responsibility for understanding and providing the physiological needs of the passenger need not be incurred even here because, by putting switches and regulating handles


AIR MOVEMENT OR TURBULENCE 15 TO 25 FT. PER MIN.
FEELING COMFORTABLE
SUMMER COMFORT ZONE
PER CENT OF SUBJECTS
55° EFFEC. TEMP. LINE
RELATIVE HUMIDITY
WINTER COMFORT ZONE
FEELING COMFORTABLE
0 PER CENT OF 97 SUBJECTS
AVERAGE WINTER COMFORT ZONE
AVERAGE SUMMER COMFORT ZONE
WET BULB TEMPERATURE FAHRENHEIT
DRY BULB TEMPERATURE FAHRENHEIT

Comfort (or effective temperature) chart

within easy reach, the passenger himself can be made the final controller of his environment.

With air conditioning—and the phrase is used in the American sense to imply thoroughgoing temperature, humidity, purity, and velocity control—the responsibility of the railway is unequivocal. The passengers are shut up in what is virtually an hermetically sealed container and they derive all the air necessary for the support of life through a more or less tortuous channel provided with fans, filters, heating or cooling elements, and possibly a regulator of humidity. While no question of safety is involved—air being admitted as in the ordinary carriage should the conditioning plant break down—there is plainly the determination to meet passenger requirements more fully than ever before, and to save the individual passenger the trouble of experimenting with knobs, switches, handles and straps on his own account.

Thus successful air conditioning involves a very complete knowledge of, and control over, the factors making for breathing comfort and bodily ease. It might seem to involve also an understanding of, and facilities for dealing with, the exceptional passenger whose needs differ from those of the majority.

The Americans, having seen the possibilities of air conditioning, were quick to make a study of the American subject, and their investigations show that, while individual ideals vary between moderately wide limits, the conditions in a railway carriage can be so adjusted as to benefit everybody in excessively hot or cold weather, and to give a feeling of real comfort to as many as 98 people in every hundred.

The results of the American investigation—conducted by the Harvard School of Public Health, and reproduced in an article by Mr. L. J. Verbarg (Supervisor of Power Plants, Missouri Pacific Lines) in the *Railway Mechanical Engineer*—are portrayed in the accompanying diagram. This is the kind of chart the engineer must have before he can begin designing and making air conditioning equipment. It shows the limits between which the temperature and humidity of the air must be kept in summer and winter to ensure a reasonable measure of passenger satisfaction. Given also some knowledge of the quantity of fresh air to be provided, and of the influences tending to carry the air temperature too high or too low, the designer can prepare a suitable plant lay-out.

The Effect of Humidity

Atmospheric air is seldom perfectly dry, and in a carriage full of people the moisture content is liable to become excessive. The temperature at which discomfort begins to be felt—at which people say it is too hot—varies with the degree of saturation of the air, for, the more the moisture the lower the maximum temperature which can be endured. This is understandable; a high temperature promotes rapid perspiration, and if the formation of beads of moisture on the body is to be avoided—if clothes are to be prevented from having that clammy feeling, and if the blood temperature is to be prevented from rising—the air must be in a condition to absorb moisture as fast as it comes to the surface of the body, *i.e.*, it must be comparatively dry, and preferably in a state of motion.

The ratio between the moisture actually present in the air at a given temperature and the absolute maximum of moisture that could be present at the same temperature is called the relative humidity. For dry air the relative humidity is zero, and for saturated air it is unity or 100 per cent. The relative humidity can be measured by extracting the moisture from the air and weighing it, but this method is too slow for practical purposes, and a better one has long been in existence. This might be called the method of two temperatures. After taking the temperature of the air with an ordinary thermometer, it is taken again with a thermometer having its bulb enveloped in wet wool. The second temperature, known as the wet bulb temperature, is generally lower than the first or dry bulb temperature, and it can never be more.

The cooling of the wet bulb is produced by the evaporation of the moisture on its surface, and is greatest when the evaporation is most rapid. But the rate of evaporation depends on the humidity of the surrounding air, being

* The first article of this series appeared in THE RAILWAY GAZETTE of June 29 last, page 1136.

zero when the air is saturated and a maximum when the air is dry. Consequently the difference between the wet and dry bulb temperatures (called the wet bulb depression) affords an indication of the relative humidity of the surrounding air. Tables have been prepared enabling this figure to be found for any pair of temperatures, and the lines slanting upwards from left to right in the diagram show the rise of the wet bulb temperature with rising dry bulb temperature for different fixed values of the relative humidity. The wet bulb depression at, say, 20 per cent. relative humidity and 80° dry bulb temperature, is the fall on the 80° vertical from the topmost slanting line to the last slanting line, but one—approximately 23°.

The lines sloping steeply downwards from left to right are called " Effective Temperature Lines " and each one shows the rise in the dry bulb temperature that, for a given degree of comfort, can occur as the relative humidity is decreased. The term " given degree of comfort " sounds rather vague, but, if considered to be a function of the loss of heat from the body, comfort is a definite and measurable quantity. The body loses heat to the air by ordinary conduction and by warm exhalations from the lungs, but in a warm atmosphere these losses are small and must be supplemented by evaporation from the skin of moisture liberated by the sweat glands.

The evaporation loss requires to be greater in proportion as the other losses become less, and consequently the sweat glands send moisture to the surface at a rate which increases with the dry bulb temperature. To be sure that this moisture will evaporate at the correct rate and fulfil the requisite amount of cooling, the humidity of the air must be diminished as the dry bulb temperature and the moisture to be evaporated are increased, and the diminution must follow a definite law. The effective temperature lines show how the variation must be caused to take place for different total heat losses. The lines to the left are for losses which are too large for comfort—making the individual feel cold—and the lines higher up to the right are for losses which are too small—making the individual feel overpowered by the heat.

The individual would not be able to detect any variation in atmospheric conditions so long as variation followed one of the " effective temperature lines," but he would feel a jump from one line to another. The figure attached to an effective temperature line is determined by its starting point on the line of complete saturation, and is a temperature rather than an index of passenger satisfaction. How the temperature is taken need not be stated because along the line of saturation no distinction can be drawn between the wet and dry bulb indications, these being exactly the same.

The diagram shows that in summer the effective temperature must be between 66° and 75° and that for the greatest happiness of the greatest numbers it should be 71°. In winter the effective temperature must be between 63° and 71° the optimum being 66°.

In summer a dry bulb temperature of 85° can be tolerated provided the relative humidity be as low as 30 per cent. With a relative humidity of 70 per cent. the dry bulb temperature must be lowered to 78° or a change in conditions will be noticed. From this comparison alone it can be seen that the air should be kept fairly dry. The influx of heat through the carriage walls and roof takes place at a rate dependent to some extent on the temperature difference between the outside and inside, and having to lower the inside temperature from 85° to 78°, on account of excessive humidity, may mean doubling this temperature difference, and so inviting a great increase in heat flow.

To cope with the increased heat flow it would be necessary to employ a refrigerator of increased capacity. Yet another increase of capacity would be necessitated if the air were so humid as to deposit moisture on being cooled. As indicated in the first article of this series, about 1,000 British thermal units are liberated for every pound of vapour separated out, and the refrigerator must deal with this.

Moisture is unavoidably given off by passengers, and by hot refreshments, but it is not necessary to add to this in the process of cleansing the air. Crittall & Co. Ltd., who have made a study of air conditioning on this side of the Atlantic, are emphatic in their denunciation of water spray air filters or any kind of purifier in which water is used. In their opinion oil filters are especially valuable where air has to be rendered fit for human consumption. An oil filter already known to the railways in this country is that of the Visco Engineering Co. Ltd., examples of this being in use on both the L.N.E.R. and the L.M.S.R.

Details of the filters and other equipment necessary for the efficient treatment of air in railway carriages will have to be given subsequently, but the present article, dealing with the purely scientific aspect of the new development, will serve to show how important is a proper understanding of the principles involved, and how great may be the consequences of making a wrong choice in a seemingly unimportant detail.

Two Views on Steel Sleepers

To the Editor of " The Times."

SIR,—Having spent the week-end in most delightful company in the " Home of Timberland "—namely, the Norfolk Broads—where some of the finest timber dwellings, in the form of bungalows, house-boats, and boats are to be seen, I caught the 6.36 a.m. express to London.

I had just finished breakfast in the restaurant car when the carriage started to sway and nearly left the rails. Stones and bits of wood started to fly in all directions, making a colossal noise, and the train was brought to a standstill. I got out to inspect the cause and the damage, and found that the engine had blown a big end and the con-rod, still attached to the engine, had been dragged along the track. On walking back some 400 yards and examining the sleepers I found that, although chipped badly, they had withstood the terrific blows, for the train was travelling at 60 miles an hour, and yet these sleepers had stood up to their job, and the track was hardly disturbed.

I was eye-witness to a similar accident in Germany when a goods train travelling over steel sleepers left the rails. The accident last Monday is definitely a case for the wooden sleeper, for had they been steel sleepers they would have cracked and split from the terrific blows, and the whole of the train would have been wrecked.

Wooden sleepers have a greater grip in the ballast than steel sleepers. One of the difficulties of keeping a railway track true is to stop what is known as " creep," as with the continual rolling-stock moving in one direction over the rails the whole of the line tends to move in that direction. The difficulty of " creep " is increased where steel sleepers are used.

The engine picked up two sleepers at level-crossings, which were laid parallel to the line, and one of them

became jammed in the brake, helping to pull up the train, which reminds one of the days when wooden brake-blocks were used.

E. H. BROOKE BOULTON

Cambridge, August 23.

* * * *

To the Editor of "The Times."

SIR,—As one of the pioneers of the introduction of steel sleepers for use on English railways, I was interested to read Mr. Brooke Boulton's letter in *The Times* of to-day.

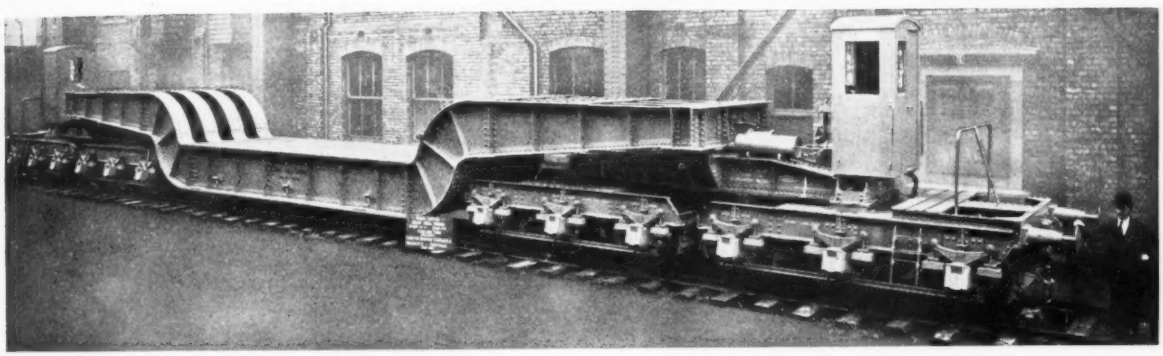
My experience of steel sleepers on the G.W.R., where over 200 miles of track, or nearly 500,000 steel sleepers, have been laid during the last five years, completely disproves the statements made with regard to the difficulty of "creep," and, in fact, is sufficient to show that the grip on the ballast of the steel sleeper is at least as great as that of the timber sleeper, and that the tendency of the track to "creep" and get out of line is in no way increased by their use. I have no reason to suppose that, in the circumstances mentioned by your correspondent, the steel sleeper would not have stood up to its work as efficiently as the timber one.

Yours faithfully,

R. CARPMAEL,
Chief Engineer, G.W.R.

Paddington Station, August 29.

HIGH CAPACITY BOGIE WELL WAGON FOR RUSSIA

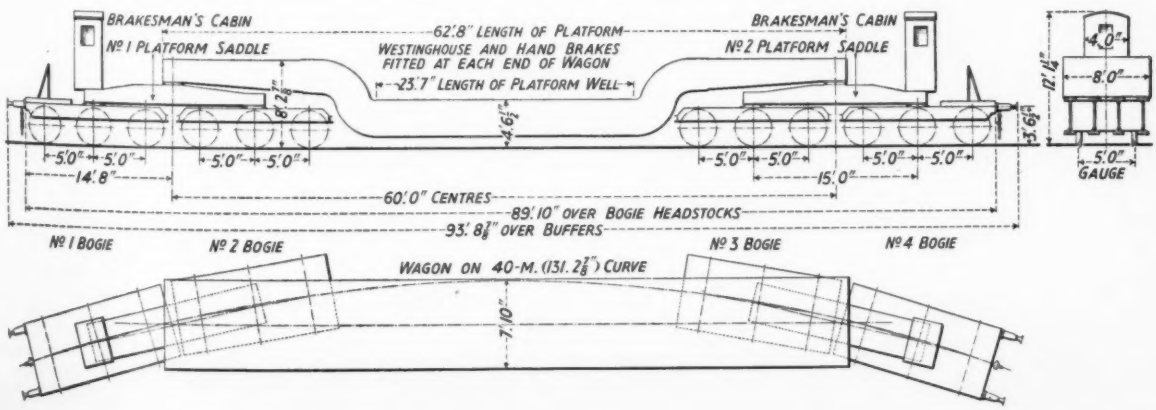


THERE has recently been completed at the works of Cravens Railway Carriage & Wagon Co. Ltd., Sheffield, an all-steel bogie well wagon, having a carrying capacity of 200 tons. This has been built to the order of the U.S.S.R. Government Railways and is capable of transporting heavy ingots, guns, turbines, transformers, condensers, and other large machinery items. The vehicle has a tare weight of 80 tons and is one of the largest railway wagons in the world. The principal dimensions are as follow:—

Gauge	5 ft. 0 in.
Length of platform	62 ft. 8 in.
Width of platform	8 ft. 0 in.
Length of well	23 ft. 7 in.
Length over buffers	93 ft. 9 in.
Maximum height	12 ft. 1¼ in.
Buffer height (unloaded)	3 ft. 6½ in.
Wheels, diameter	3 ft. 5⅝ in.
Size of journals	11 in. × 6 in.

The wagon is mounted upon four six-wheeled bogies, each pair of wheels supporting a saddle upon which the main loading platform is pivotally mounted. The construction and testing of the platform girder were carried out in conjunction with the Cleveland Bridge & Engineering Co. Ltd., Darlington. The arrangement provides the necessary flexibility for negotiating the minimum curve of 40 m. (131 ft.).

Side buffers and central drawgear of the Russian Government Railway standard type are fitted on the headstocks of the outer bogie. The axle journals are fitted with cast steel oil axleboxes upon which the bogie frames are supported by means of steel laminated springs and india-rubber auxiliary springs. Westinghouse air brake apparatus is fitted and this works in conjunction with a hand screw brake, the latter being operated from the brakeman's cabin located on the saddle at each end of the wagon.



AUTOMATIC TRAIN CONTROL ON THE GERMAN STATE RAILWAY

*Extensive installations of the inductive system**

INTERMITTENT inductive automatic train control is already in use on several important main line routes of the German State Railway and is to be extended to others during the present year, as indicated on the accompanying map (Fig. 1). About 125 locomotives and 2,600 km. of track are now equipped, including the Berlin-Hamburg section and the express diesel cars running thereon. The track equipment also exists between Hamburg and Bremen, but the apparatus has not yet been extended to all the locomotives running on these sections. Many more, however, are to be equipped during the next twelve months. It will be seen from the map that the routes selected for further equipment are of considerable length, and are among those over which the fastest trains are run.

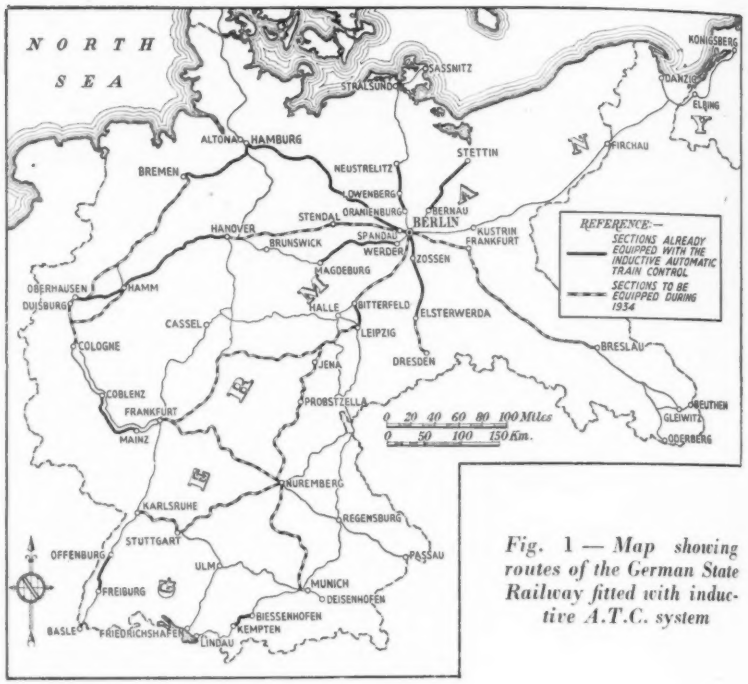


Fig. 1 — Map showing routes of the German State Railway fitted with inductive A.T.C. system

The earliest experiments in Germany with automatic train control and cab-signals date back many years. One of the most interesting devices experimented with was the electro-magnetic apparatus of C. Stahmer, Georgsmarienhütte, which was installed between Münster and Osnabrück. In that case a powerful permanent magnet was mounted over the track and acted on receiving apparatus attached to the locomotive cab roof. Just before reaching a distant signal, whether "on" or "off," the driver received a visual warning in the cab and a bell rang until he pressed a push-button. The Van Braam mechanical apparatus of the Bruchsal works and the electrical ramp contact apparatus of the Siemens and Halske type were also tried. Since the war, partly on account of some rather bad accidents which have occurred, the subject has been again taken up and many further experiments made. On the Berlin electric local lines a mechanical train-stop has been installed at practically all stop signals, but for the fast express routes the inductive principle has found most favour, although the Bäseler-Zeiss optical system is also being experimented with still. In 1925 the Reichsbahn drew up a programme of requirements for inductive automatic train control to serve as a guide to the signal manufacturing firms, and this, with some modifications indicated by experience, is still in force. The chief reasons for the choice of inductive transmission were immunity from climatic interference and absence of moving parts on the track, with the fact that no source of current is required along the line and that the maintenance is practically confined to the parts on the locomotives. It is also easier to adopt inductive apparatus in conjunction with light signals, whereas mechanical train-stops need motors of some sort to operate them.

The first principle laid down by the Reichsbahn is that the driver shall be left free to manage his train and shall be held fully responsible for doing so, the train control

* Based on an article in *Zeitschrift für das gesamte Eisenbahn-Sicherungswesen.*

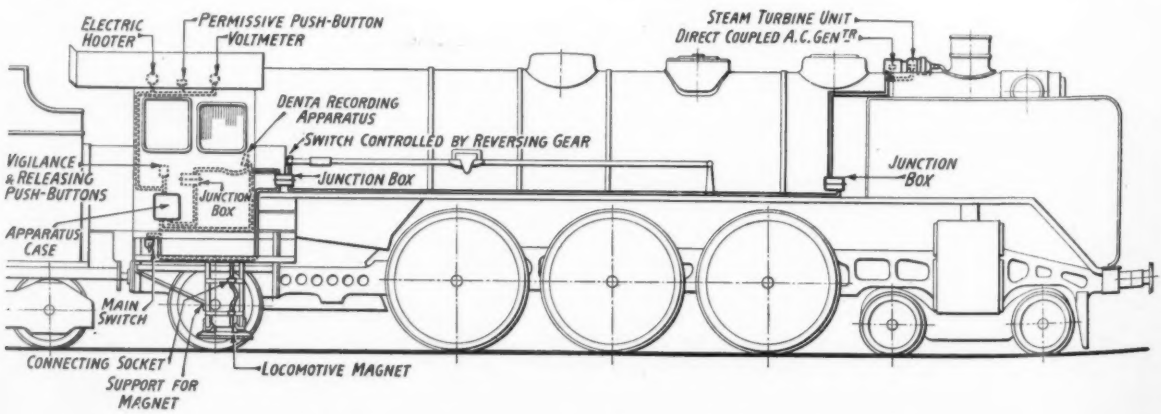


Fig. 2—General arrangement of apparatus on express locomotive

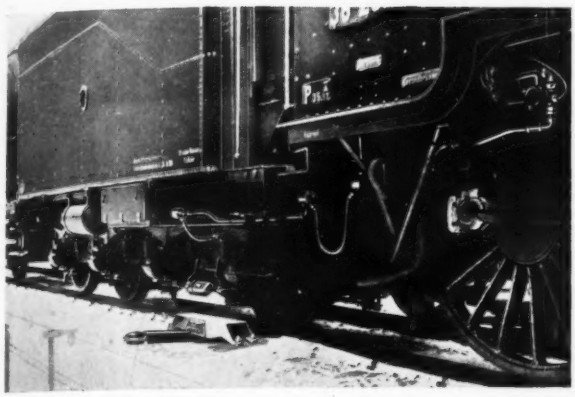


Fig. 3—Locomotive magnet passing over track magnet (On the right below the framing the cut-out cock)

apparatus only coming into operation if he fails in his duty. The second principle adopted is what is called the vigilance principle, that is to say the driver is obliged to observe the distant signals along the line and signify that he has done so by operating the vigilance button within five seconds after passing one, which action is recorded. Should he neglect to do so, an automatic brake application will begin after this time interval has elapsed. Temporary warning discs placed by the permanent way staff can also be made to produce this effect. Should a home signal be over-run, a full brake application is produced, which cannot be cancelled until the train has come to a stand. In addition, a speed-checking control is fitted which causes a brake application to come into action ten seconds after passing an adverse distant signal if the driver has not by that time reduced speed to a predetermined figure, and this arrangement can also be applied near curves and other places where speed should be reduced.

Working of the Apparatus

Fig. 2 shows the layout of the locomotive equipment. On the side of the engine, a short distance above track level, is supported the locomotive magnet, seen also in Figs. 3 and 4, which carries three windings energised as resonant circuits tuned to frequencies of 500, 1,000 and 2,000 cycles, from a turbo-generator set on the boiler. The three frequencies correspond to the absolute stop,

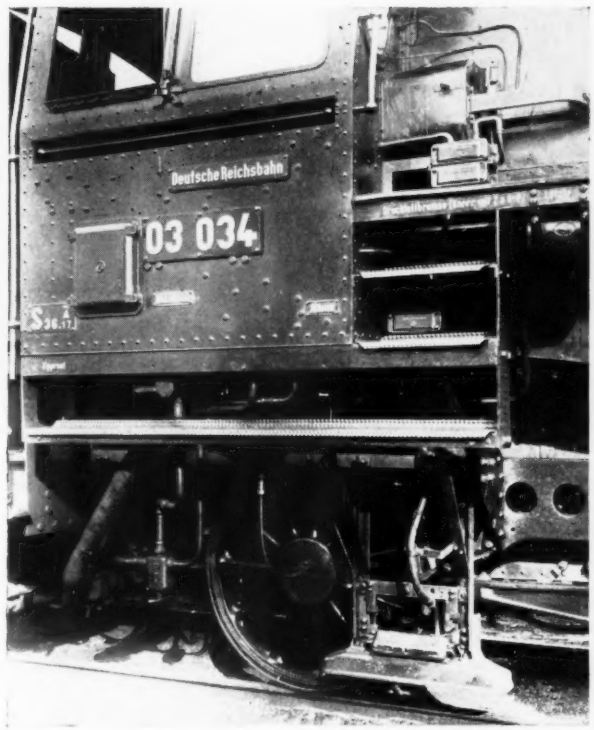


Fig. 4—Latest arrangement of locomotive magnet

distant signal and speed control effects respectively, and in each circuit on the locomotive there is a normally energised relay which in turn controls the other apparatus. An electric hooter sounds whenever any essential part becomes defective, or when the brakes are applied independently of the driver. To pass a stop signal at "danger," in case of unavoidable necessity, the driver operates a special push-button, normally sealed, which action is recorded. The fittings on the locomotive are made specially robust. The relay units are arranged with jack connections, and the wiring is run in steel tubing lined with insulating material. A cut-out switch is provided to put the apparatus out of action if special circumstances necessitate this.

Magnets are placed beside the track, as seen in Fig. 3

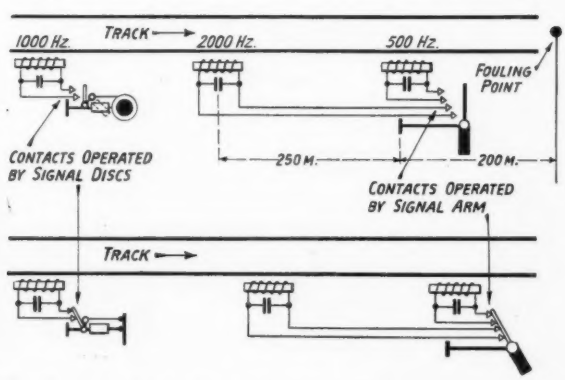


Fig. 5 (left)—Three-indication distant signal with track-magnet. (The signal indicates that a reduced speed is called for at the home signal)

Fig. 6 (above)—Electrical connections between track magnets and signals

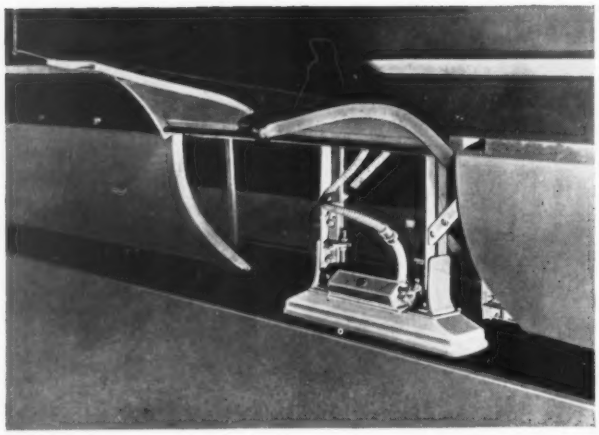


Fig. 7—Magnet on diesel railcar

and Fig. 5, tuned respectively to the frequencies mentioned above and connected electrically to the signals as shown in Fig. 6, their condensers being short-circuited when the signals are "off." When the signals are "on" and a locomotive magnet passes over a track magnet, the reaction between the two resonant circuits causes a momentary reduction of the current in the circuit on the train, releasing the corresponding relay and producing the appropriate control effect. The signal department staff is supplied with special testing sets for seeing whether the track magnets are in proper order. As indicated in Fig. 7, the express diesel trains are fitted with the equipment and no difficulty has been experienced with the working at the highest speeds. Fig. 8 shows the interior of the driver's cab on the Flying Hamburger. The vigilance and releasing buttons can be seen on the controller casing just above the hand brake wheel.

Recording Apparatus

The Deuta speed recording apparatus, shown in Fig. 9, is used in conjunction with the automatic train control and it makes a continuous record during the run in the form shown in Fig. 10. The speed of the train, the condition of the control apparatus, either in or out of service, and the various effects that take place are recorded, together with the operation by the driver of the vigilance, releasing and permissive push-buttons.

The above particulars show that the German State Rail-

Fig. 8—Driver's cab on the Flying Hamburger (Vigilance releasing and permissive push-buttons seen above hand brake wheel)

way has devoted close attention to the automatic train control problem and, in association with the leading signal manufacturers, has developed a system of a very complete character. The details relate to the installations made to date, but some small modifications are now contemplated in those about to be put in hand, to which we hope to refer in a later issue. The general principles adopted are, however, in no way affected.

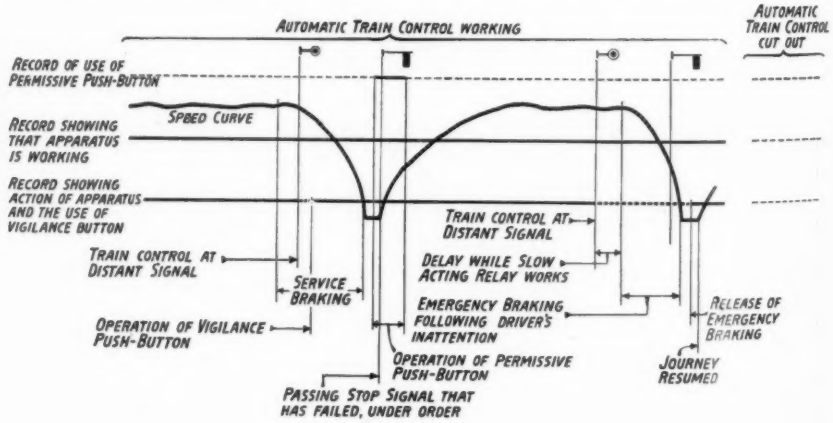

AUTOMATIC TRAIN CONTROL WORKING
AUTOMATIC TRAIN CONTROL CUT OUT
RECORD OF USE OF PERMISSIVE PUSH-BUTTON
SPEED CURVE
RECORD SHOWING THAT APPARATUS IS WORKING
RECORD SHOWING ACTION OF APPARATUS AND THE USE OF VIGILANCE BUTTON
TRAIN CONTROL AT DISTANT SIGNAL
TRAIN CONTROL AT DISTANT SIGNAL
DELAY WHILE SLOW ACTING RELAY WORKS
SERVICE BRAKING
EMERGENCY BRAKING FOLLOWING DRIVER'S INATTENTION
RELEASE OF EMERGENCY BRAKING
OPERATION OF VIGILANCE PUSH-BUTTON
OPERATION OF PERMISSIVE PUSH-BUTTON
JOURNEY RESUMED
PASSING STOP SIGNAL THAT HAS FAILED, UNDER ORDER

Fig. 9 (left)—Deuta speed recorder instrument

Fig. 10 (above)—Record taken by Deuta speed recorder

2-8-2 TANK LOCOMOTIVES, EASTERN RAILWAY OF FRANCE

These three-cylinder simple engines work 500-600-ton suburban trains

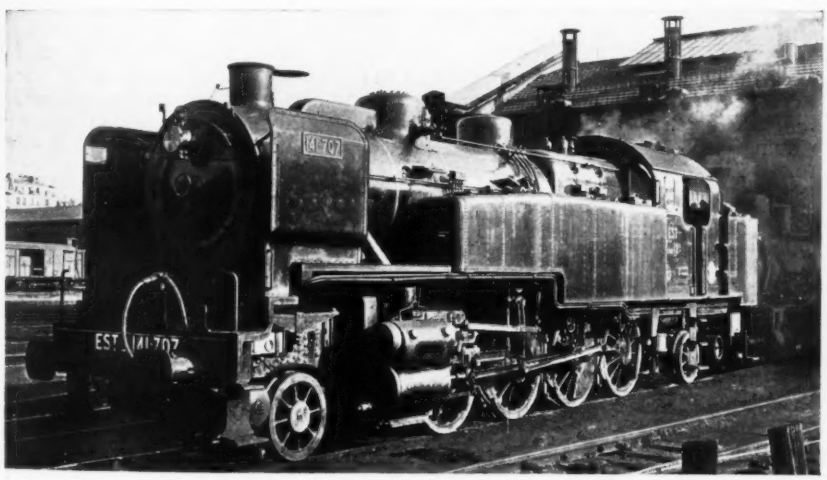
THE introduction of all-steel coaches in the Paris suburban services, and the acceleration of the suburban trains to relieve the congestion on the 9 km. (5·6 miles) of the Est main line, between Paris and Noisy, necessitated the designing of a new and powerful type of tank locomotive, the first of which, No. 141,701, was built in the company's works at Epernay about four years ago. There are now 42 of these locomotives in service, and so successful was the design that the French State Railways also built 40 for their heavy Paris suburban traffic.

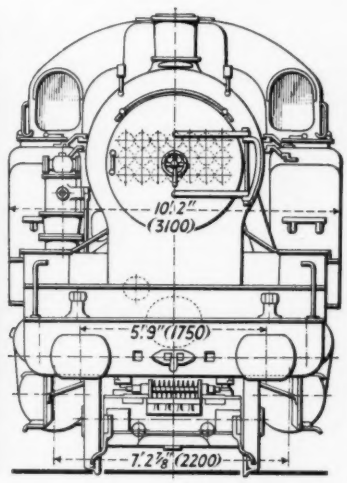
The general requirements forming the basis of the new design were that the locomotives should be capable of very rapid starting and acceleration, with trains weighing 510 metric tons (492 tons); that the average speed should exceed 60 km. (37·3 miles) per hour, with a possible maximum speed of 90 to 100 km. (55·9 to 62·1 miles) per hour; and that the capacity of the water tanks should be 13 cu. metres (2,860 gallons).

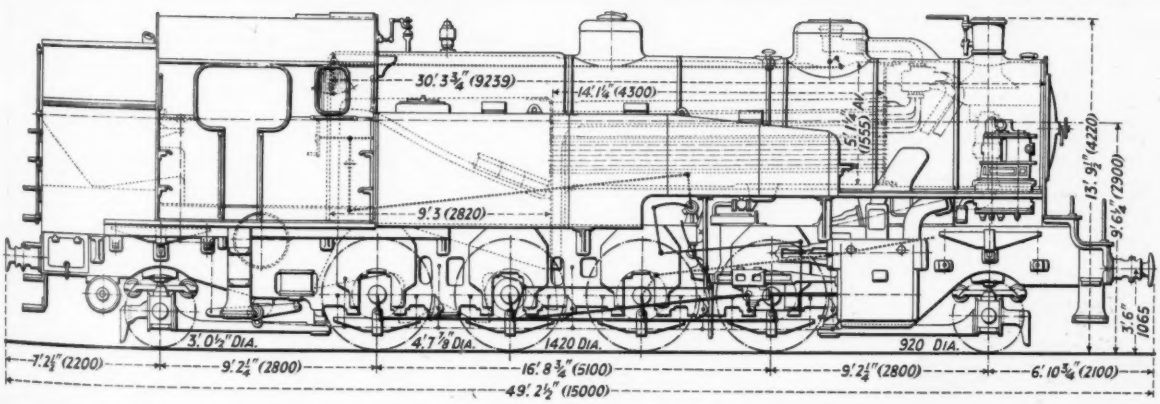
The design adopted was that of a single-expansion three-cylinder machine using superheated steam and having the 2-8-2 wheel arrangement. The general features of the locomotive are shown in the accompanying drawing, and the leading dimensions are as follow:—

Cylinders, diameter ..	510 mm. (20 in.).
,, stroke	660 mm. (26 in.).
Wheels, coupled, diameter	1,420 mm. (4 ft. 8 in.).
,, Bissel, diameter ..	920 mm. (3 ft. 0¼ in.).
Wheelbase, rigid	5,100 mm. (16 ft. 8¾ in.).
,, total engine ..	10,700 mm. (35 ft. 1¼ in.).
Boiler working pressure ..	14 hectopièzes (203 lb. per sq. in.).
Boiler, mean diameter ..	1·555 m. (5 ft. 1¼ in.).
Heating surface—	
Flues and tubes	122·33 sq. m. (1,316 sq. ft.).
Firebox	17·30 ,, (186 ,,).
Total	139·63 ,, (1,502 ,,).
Superheater	45·28 ,, (487 ,,).
Combined total ..	184·91 ,, (1,989 ,,).
Grate area	2·80 sq. m. (30·13 sq. ft.).
Adhesion weight	74·99 metric tons (73 tons 16 cwt.).
Weight of engine in working order	107·3 metric tons (105 tons 12 cwt.).
Water capacity	13·05 cub. m. (2,871 gallons).
Fuel capacity	4·027 cub. m. (142·2 cub. ft.).

The leading and trailing bissels are identical in design and arranged symmetrically with regard to the coupled







General view (at La Villette), front and side elevations of new 2-8-2 three-cylinder, simple expansion tank locomotive, C. de f. de l'Est

wheels. Their lateral displacement is 130 mm. (5⅛ in.) on each side of the centre line, and the locomotive can negotiate satisfactorily a curve of 90 metres (295 ft.) radius.

The diameter of the coupled wheels, 1,420 mm. (4 ft. 8 in.), is small for the speeds required but facilitates rapid starting. The springing is uncompensated throughout. The three crank pins are set at 120 degrees, the outside horizontally-placed cylinders driving the third coupled axle, and the inside inclined cylinder driving the second coupled axle. Special nickel-chromium steel is used for the connecting and coupling rods. Unlike the arrangement used in the company's other three-cylinder locomotives, the valve motion of the inside cylinder is not actuated by the combination of the two outside motions. It is independent and incorporates a link operated by an eccentric mounted on the leading coupled axle. There is only one reversing gear for the three valve motions, which latter are of the Walschaerts type. This arrangement is considered preferable in view of the high speed of the locomotives and the small diameter of their driving wheels.

The piston valves, 250 mm. (9⅞ in.) diameter, are of the light stamped plate type, similar to those of the 41.001 locomotives, and their action provides the same features of long stroke and large openings, even at an early cut-off. No tail-rods are provided either on the pistons or the piston valves. The piston segments are arranged like those of the piston valves, and the rings are of bronze in order to reduce to a minimum the wear on the cylinder liners. Systematic tests show that this arrangement gives excellent results as regards steam tightness, support of the segments, and wear on the cylinders. A great part of the wear occurs on the bronze rings, which are easily replaceable when, after two successive rotations of 120 degrees, the wear has become practically the same on the different diameters. The cylinder lubrication is effected by a type GRHM mechanical lubricator with sight-feed and pipes terminating above each of the two piston valve heads; at the centre of the upper generatrix of the cylinders; and in the high pressure steam cylinder of the brake pump.

The boiler is of the type most extensively used on the Est system, with flat-crowned Belpaire firebox, a narrow grate between the frames, twenty-one flues of 125/133 mm. (4·921/5·236 in.) diameter, and 141 tubes of 45/50 mm. (1·771/1·968 in.) diameter. A 21 element superheater of the D.M. type is fitted. The regulator valve, in the dome, is of the balanced single-seated type; and a variable blast pipe is provided. The boiler may be operated at a pressure of 16 hectopiezes (232 lb. per sq. in.), but the working pressure is provisionally fixed at 14 hectopiezes (203 lb. per sq. in.) The locomotive is fitted with a Westinghouse brake, and the hand brake has a ratio which makes it capable of exerting force on the brake shoes practically equal to that developed by the compressed air brake.

(*Editorial comment on page* 369.)

What Air Conditioning Can Achieve

Two Editorial Notes on page 368 of this issue deal with the latest type of American sleeping car and air conditioning which is incorporated in its design. The illustrations below are interior views of the Union Pacific light, high-speed, articulated, streamlined train illustrated and described in THE RAILWAY GAZETTE of June 16, 1933. They clearly show the accommodation as arranged for night travel and the privacy secured by the sliding doors to occupants of both upper and lower berths and also the same compartment arranged for day travel. Comfort in the small space enclosed for each berth at night is possible only by the use of air-conditioning.

Left: Pullman sections or compartment arranged as sleeping accommodation with folding ladder to upper berth and sliding doors for privacy of both occupants

Above: The compartment in day use showing full width window and sliding door, open, in foreground

NEW POST OFFICE VEHICLES, L.M.S.R.

Five Wolverton-built coaches incorporating modern improvements of lighting, heating and ventilation, four of which are equipped with pick-up apparatus

Exterior of new travelling post office coach with pick-up apparatus

FIVE new Post Office vehicles have recently been built at the Wolverton works of the L.M.S.R. for postal service. Four of them are 60 ft. long by 8 ft. 8 in. wide and are equipped with the usual letter sets, registered letter sets, newspaper sets, hinged flat tables, bag rails, and net apparatus and traductors. Three of the vehicles are also fitted with excellent lavatory accommodation, an electric water heater and small electric oven. The remaining one is 57 ft. by 8 ft. 8 in., and its equipment is generally similar to that of the other four, except that there is no net apparatus or lavatory. It is so constructed, however, that the net apparatus could be added without alteration to the body, should the necessity arise.

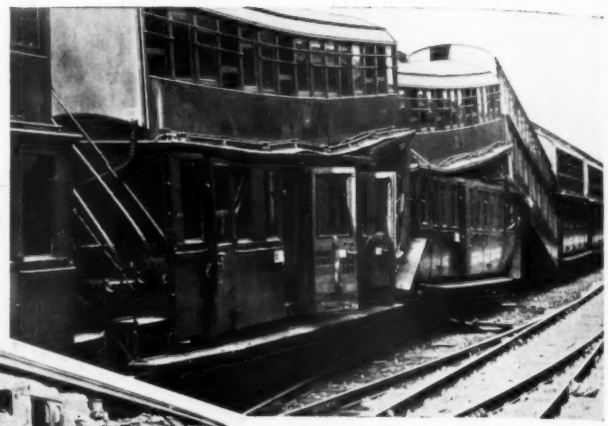
The underframe and bogies are of steel, constructed to the company's standard designs, and are fitted with shock absorbing buffers, vacuum automatic brake, steam warming pipes, and a dynamo, batteries and regulator, to supply current for lighting, water heater and oven. The bodies are of teak framing. The side, ends and roof are sheeted outside with steel panelling, giving a flush finish, with the exception of the doorway and net apparatus recesses. The exterior is painted in L.M.S. colours with bold lettering "Royal Mail" on each side. The floors consist of fireproof composition, laid on dovetail corrugated steel sheeting, supported by jarrah floor bearers. For through working each vehicle is fitted with standard Post Office gangways. The interior is finished in deal casing painted green, and the letter and newspaper sets, and sets of pedestal drawers are of polished teak.

Heating is by means of Westinghouse vertical heaters and a 2-in. overhead pipe running the length of the vehicle and suspended from the roof. Lighting is provided by a number of 15-watt lamps. Particular attention has been paid to the prevention of draughts from the doorways and gangways, while ventilation is afforded by drop lights in the doors and extractor vents in the roof.

We are indebted to Mr. W. A. Stanier, Chief Mechanical Engineer, London Midland & Scottish Railway, for the foregoing description. An editorial article on page 370 of the present issue gives brief particulars of the history and development of the travelling post office, of which the vehicles illustrated on this page are the most modern example.

Interior showing well lighted and neatly arranged sorting facilities in the new L.M.S. post office vehicles

A 4-6-0 express locomotive without its enginemen ran away from La Villette locomotive depot at Paris, C. de f. de l'Est, last Sunday and was brought to a stand only by colliding with a loaded suburban train in the Gare de l'Est. 50 persons were injured. The suburban locomotive (below) is one of the 2-8-2 type described on page 385



Below: High-speed Beyer-Garratt locomotive on service in Algeria. The tests of this engine, when a maximum speed of 82 m.p.h was attained, were described in our issue of September 29 of last year

Views in the L.N.E.R. laundry at Colchester showing (left) the ironing machine and (right) a battery of washing machines
(See editorial note on page 368)

RAILWAY NEWS SECTION

PERSONAL

Mr. A. J. Hills, formerly Assistant to the Vice-President, Canadian National Railways, has been appointed Chief of Personnel, in charge of a new Department created as from August 20. This department will deal with wage agreements and adjustments, employment and service conditions, co-operative movements and all other matters of staff relations.

Mr. Philip Macer-Wright has been appointed Press Director to the Travel and Industrial Development Association as from the beginning of October.

Sir Thomas Wilford, K.C.M.G., late High Commissioner for New Zealand and a Director of the National Bank of New Zealand, has joined the board of Sternol Limited.

INDIAN RAILWAY STAFF CHANGES

Messrs. B. Moody, V.D., and J. C. O'Neill have been appointed to officiate as Divisional Superintendents, N.W.R., as from June 26 and July 3 respectively.

Mr. E. E. Pierce has been appointed Manager and Chief Engineer of the British Power Railway Signal Co. Ltd. He has been associated with the firm for 12 years and for several years has held the position of Chief Engineer to the company.

RAILWAY AIR SERVICES APPOINTMENTS

Mr. K. W. C. Grand, General Assistant to Superintendent of the Line, Great Western Railway, has been appointed a Director of Railway Air Services Limited in place of the late Squadron-Leader S. B. Collett, who represented the Great Western Railway on the Board.

Mr. G. E. Orton, Commercial Assistant to Superintendent of the Line, Great Western Railway, has been appointed to the Joint Committee of Railway Air Services in place of Mr. Grand.

G.W.R. CHAIRMAN'S VISIT TO SOUTH WALES

This visit of the Chairman, Directors and principal officers of the Great Western Railway, and the various functions that took place in the South Wales area on August 1 and 2, were fully described in the issues of August 3 and 10 of THE RAILWAY GAZETTE. The visit was important mainly as being the first made by Sir Robert Horne in his capacity as Chairman, and arrangements were made for him to meet all the more prominent representatives of the various South Wales industries. The photographs, reproduced below by the courtesy of the *G.W.R. Magazine*, show the Chairman with Directors and railway officers at Cardiff station and docks.

Left to Right: Mr. H. L. Wilkinson (Superintendent of the Line), Sir Henry Mather Jackson (Director), Sir Robert Horne (Chairman), Mr. C. T. Hurry Riches (Divisional Locomotive Superintendent), the Earl of Dunraven (Director), Mr. F. G. Wainwright (Divisional Superintendent), the Rt. Hon. Lord Davies (Director), Mr. S. A. Blackall (Divisional Engineer), Sir W. J. Thomas, Bart. (Director), Mr. C. B. Collett (Chief Mechanical Engineer), Sir Henry B. Robertson (Director)

Left to Right: Sir Robert Horne (Chairman), Mr. F. R. E. Davis (Secretary), Sir James Milne (General Manager), and Mr. R. Carpmael (Chief Engineer)

The Chairman of the Great Western Railway with directors and officers of the company at Cardiff on the occasion of a tour of the stations and docks at Cardiff and Newport

TEMISKAMING RAILWAY INQUIRY.—A special commission appointed by the newly-elected Liberal Government of Ontario is investigating the operations by the recently-ejected Henry Ministry of the Temiskaming & Northern Ontario Railway which is owned and operated by the Ontario Government. Witnesses before the commission have stated that the bonded indebtedness of the railway is now $43,000,000, that the annual statements did not present true pictures of the operations because surpluses were claimed when deficits were actually incurred and that personal expenditures of the officers in entertaining, and in the use of private cars were extravagant. It was stated that total accumulated deficits from 1915 were $7,766,453, and that a sum of $8,181,839 in interest was due from the railway to the Ontario Government.

The Mechanical Informator

An electrically operated indicator giving time-tables to and from individual stations

It has been a matter of common complaint for some time past that the existing forms of railway time-table, either of the large sheet type or in book form, leave room for improvement, or rather simplification. The public has not always the skill or the patience to look up its trains, and this probably acts as a deterrent to some classes of railway travel.

The Southern Railway is now experimenting with a mechanical time-table which, by merely pressing a button, gives the train service from the station where the machine is installed to and from any one of some three hundred other stations on the system. The tables are printed in large type, are well lighted, and simple to understand.

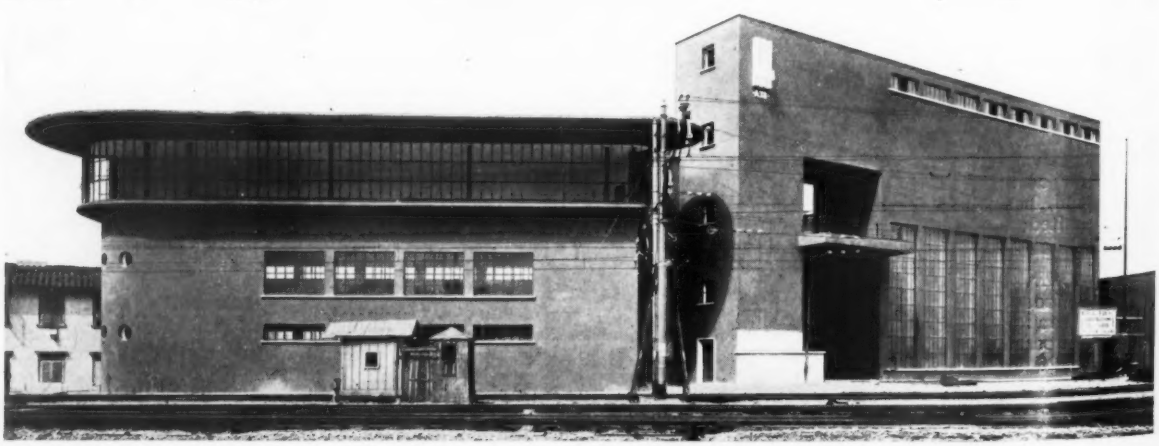
Time-table indicator in use at Horsham

This machine is surmounted by a frame, at the back of which there is a list of the three hundred stations, opposite each of which there is an index number between 1 and 50. Below this frame is a keyboard of fifty buttons. To operate the machine, it is only necessary to press the button of the index number of the destination required. This raises a card in the frame, containing the train services required. These cards also carry a strip advertisement at top and bottom, which enables the machine to be made a source of revenue. The time-tables themselves are made out on the principle of the A.B.C., but each card shows some six stations in the same neighbourhood, besides, of course, the station of departure.

It is intended to instal these machines in hotels and other places of public resort, as well as at railway stations. The experimental machine, which is manufactured by Mechanical Informator (1933) Limited, 25, Haymarket, S.W.1, is now in use at Horsham station, and has proved an unqualified success. It is in constant use throughout the day, and relieves the booking clerks and ticket inspectors from answering innumerable questions as to times of trains.

FINCHLEY MODEL ENGINEERS' SOCIETY.—The opening meeting of the Finchley Model Engineers' Society, which was officially formed on July 11 last, was held in the society's temporary clubroom at Deansgarth, The Bishop's Avenue, East Finchley, N.2, on August 21. A short talk on the art of model making and operation by Mr. Crebbin was followed by the projection of a cinema film showing scenes on miniature and full-size railway systems. The Society has a stand at the Model Engineers' Exhibition, the Royal Horticultural Hall, Westminster, where until September 15 those interested will have an opportunity of making the personal acquaintance of members of the Society. Prospective members should communicate with the Hon. Secretary, Mr. S. G. Pritchard, Bishopswood, The Bishop's Avenue, East Finchley, N.2.

LONDON TRANSPORT POSTERS.—Hills and dales and summer foliage figure delightfully in a couple of brightly-coloured posters bearing the signature A. A. Moore and the legend: "At London's Service." They are destined for use on London Transport hoardings and will, we predict, be generally admired.



Signal box of 280 levers and, on the right, central heating plant building at the new Florence station, Italian State Railways, now under construction

Labour Unrest on Argentine Railways

(*From our Buenos Aires correspondent*)

The agitation amongst the Argentine railwaymen for the restoration of the wage cuts and abolition of short time (briefly reported in the Overseas columns in THE RAILWAY GAZETTE of August 10) subsequently assumed a rather menacing aspect.

A week or two after the railwaymen's conference, previously mentioned, the negotiations at Government House were resumed in the presence of the Director-General of Railways. It soon became evident that there was but small hope of an agreement being reached, owing to the refusal of the men's representatives to modify their demands, they maintaining that, as the weekly traffic returns had increased and business generally was improving, with resulting benefit to the railways, the continuation of the wage cuts was both unjust and unnecessary. They finally announced that they were not disposed to acquiesce in these reductions after September 1, and in view of their uncompromising attitude there was evidently nothing to be gained by continuing the negotiations, which were therefore broken off.

When it became known that the negotiations had broken down, meetings of railwaymen were held at various points on the different systems at which resolutions were passed, with more or less unanimity, promising to support the executive of the unions in whatever action they might decide to take. Meanwhile, in response to a request by the Director-General of Railways for a statement of their case in writing, the unions submitted a lengthy memorandum consisting mainly of a recapitulation of the various problems in regard to road competition, co-ordination of transport and other matters entirely irrelevant to the point at issue. After reiterating these arguments, the unions intimated that when these questions had been settled, they would be willing to discuss with the companies the question of contributions by the employees, if this were shown to be necessary as a result of the findings of the Transport Committee, also referred to in THE RAILWAY GAZETTE of August 10.

When the contents of the unions' note was communicated by the Director-General of Railways to the Labour Advisory Committee of the private companies, that body replied that the points raised in the document were outside their jurisdiction, which covered only matters affecting the technical work of the staff and the remuneration.

As a deadlock now seemed to have been reached, the Director-General asked the companies for a statement showing comparative figures of operating results of the privately-owned railways from the financial period 1929-30 to date, with an analysis of the expenditure. In response to this request the legal representatives of the companies submitted a statement showing in the clearest and most convincing way that the financial situation, far from having improved sufficiently to justify the restoration of the wage cuts, as the unions asserted, was in reality much worse than it was four years ago. This is shown by the following table of the aggregate earnings and expenditure of all the private railways for the last four financial periods:—

	$ Paper.			
	Period 1930–31	Period 1931–32	Period 1932–33	Period 1933–34
Gross receipts	490,447,972	462,725,581	416,644,186	413,438,022
Total expenses	401,135,881	389,743,810	356,119,562	369,360,645
Net receipts	89,312,091	72,981,771	60,524,624	44,077,377

It will thus be seen that, in 1930-31, the period which served as the basis for reducing wages, the net receipts amounted to $89,312,000 paper, whereas for the financial year 1933-34 they had fallen to the extremely low figure of approximately $44,000,000 paper or rather less than half the 1930-31 figure. Thus the unions committed a grave error in asserting that the financial situation of the companies had improved, while a still greater error was that of adopting last year's results for purposes of comparison, as the basic year was 1930-31, when the gross receipts amounted to $490,000,000 against $413,000,000 for the 1933/34 period.

The memorandum then went on to point out that the wage cuts and short time had not, as the unions assumed, been established solely to avoid the dismissal of large numbers of surplus men, but also to enable the companies to cover their working expenses (including provision for renewals) and maintain their services, but not to pay dividends. The assumption of the unions that the wage reduction agreements had been devised solely for their protection without any regard for the interests of the companies, with their total invested capital of $3,500,000,000, was therefore erroneous. After observing that 30 per cent. of the employees at present on the pay-sheets of the various companies were superfluous, the memorandum stated that although there were admittedly signs of returning prosperity in the country, these were as yet too slight to affect the railway receipts to any marked extent, and until a general industrial revival was reflected in the railway revenues, the companies had no alternative to maintaining the wage cuts.

After remarking that it was impossible for the railways to wait until the Transport Committee had presented its report, before taking such measures as were legitimately open to them to alleviate the extremely difficult position in which they were placed, the representatives of the companies summarised their conclusions as follow:—

1. In the majority of countries, large numbers of railwaymen had been discharged owing to the crisis; this had not so far occurred in Argentina.

2. In all countries, salaries in general, and those of railway employees in particular, had been reduced.

3. The cost of living had fallen in Argentina, and according to some authorities, the purchasing power of the currency, and consequently of salaries, had risen by 35 per cent.

4. The salaries of railwaymen had been increased by 60 per cent. since 1917, and by 35 per cent. since 1920.

5. Salaries in all industries had been reduced by 20 to 30 per cent.

6. The unions apparently ignored the fact that railway salaries were subject to an automatic increase through the operation of the "escalafon," so that the average wage was at present higher than in 1926, when the country and the railways were enjoying a period of prosperity.

7. Finally, if the wage cuts were reduced, the net receipts would be insufficient to cover the interest on debentures and other fixed charges, while no dividend could be paid on the preference shares.

Continuous Brakes on Goods Trains in Europe

The very important decision was taken some years ago internationally to equip with the continuous brake all goods rolling-stock. The present position, according to *Les Transports Modernes*, is that the work is now completed on the following systems:—German State Railway; Belgian National Railways; Danish State Railways; Hellenic State Railways; Franco-Hellenic Railway; Netherlands Railways; Prince Henry Railway (Luxembourg). The work will be completed by the end of this year on all the French main line railways, and by the end of 1935 on the Swiss Federal Railways, the Bern-Lötschberg-Simplon Railway, and the Czechoslovak State Railways. In the other countries the date of completion is still uncertain. In Belgium, France, Greece, Italy, Luxembourg, and Poland the Westinghouse system has been adopted; in Germany the Kunze-Knorr and Hildebrande systems; in Bulgaria, Denmark, Holland, Lithuania, and Sweden the Kunze-Knorr; in Switzerland the Drolshammer; in Jugoslavia the Bozic; and in Spain and Portugal the vacuum brake. In Austria, Hungary, Norway, Saar, and Turkey, the Kunze-Knorr and the Westinghouse systems are used; in Czechoslovakia the Kunze-Knorr and Bozic brakes; and in Russia the Kazantzeff and Westinghouse systems.

The Bodmin and Wadebridge Railway Centenary

The Southern Railway combined with the local authorities and the Old Cornwall Society to celebrate the centenary of the Bodmin and Wadebridge Railway on Wednesday, September 5. After inspecting the Bodmin and Wadebridge first and third class coach of 1834, on exhibition at Waterloo, which was decorated for the occasion, the official party from London left by the Atlantic Coast Express at 10.35 a.m., and on arrival at Wadebridge station were welcomed by the reception committee. A short speech of greeting was made by Mr. H. S. Derry, Chairman of the Wadebridge Parish Council.

The party then inspected a modern third class corridor coach and restaurant car, both of the latest design, which the Southern Railway had placed on exhibition in the station yard, before proceeding to the Town Hall, where a number of relics of the original Bodmin and Wadebridge Railway were on view. These included tickets and documents relating to the old line, a section of rail mounted on a granite sleeper, a guard's horn lantern, and the original terminal milestone from Ruthern Bridge. Copies of *The Railway Magazine* of July and August last, containing a history of the line, were also displayed. The Southern Railway had loaned two photographs of old Bodmin and Wadebridge stock, showing the coach now on view at Waterloo and a second class carriage of the same period, which is now in the York Railway Museum.

The visitors were entertained to tea in the Town Hall, after which Mr. E. Martin, Chairman of the Old Cornwall Society, and Mr. B. J. Pethybridge, Chairman of the Bodmin section of the Society, made speeches extending a welcome to the railway representatives and referring to the important parts played by Cornwall and Cornishmen in the development of steam traction. In reply, Mr. P. Nunn, Divisional Superintendent, Western Division, Exeter, thanked the organisers of the exhibition on behalf of the company and made some interesting comparisons between ancient and modern railway practice. He concluded by reminding his hearers that a journey from London to Wadebridge now occupied approximately six hours, whereas before the railway came it necessitated three or four days.

Mr. W. H. Pape, Advertising Department, Waterloo, seconded Mr. Nunn and expressed his gratitude to the people of Cornwall for their enterprise in respect of railways. He hoped that time would bind the Southern Railway and the county of Cornwall still closer together.

The party then travelled to Bodmin, where further relics were examined, including the terminal milestone and the remaining piece of original track abutting thereupon. An interesting feature of modern railway practice which was pointed out was the only catch point on the Southern Railway designed to allow the passage of trains in both directions, in addition to catching runaway vehicles.

Mr. Pethybridge, the deputy mayor of Bodmin, addressed the party before the return journey to Wadebridge was begun. The train from Wadebridge to Bodmin was hauled by 0-4-6T No. 216, with its smokebox decorated with flags.

In connection with the celebrations, the Southern Railway issued cheap tickets from stations within a radius of sixty miles, and a special sixpenny cheap return from Bodmin to Wadebridge.

Southern Railway officials present were :—

Messrs. P. Nunn (Divisional Superintendent, Western Division, Exeter), A. Earle Edwards (Assistant Superintendent, Western Division, Exeter), W. H. Pape, F. Cawsey (station master, Wadebridge), Mr. G. Gale (Clerk in Charge, Bodmin), and Messrs. W. Brown and F. H. Bayter, former stationmasters.

On Thursday morning, the official party made a motor tour in the district.

The Model Engineer Exhibition

The sixteenth annual Model Engineer Exhibition was opened at 11 o'clock yesterday (Thursday) morning, and will continue until September 15, at the Royal Horticultural Hall, Vincent Square, Westminster. In a foreword to the catalogue, Mr. Percival Marshall, Editor of *The Model Engineer*, stresses the fact that the Exhibition is now well-established as the recognised rallying point for model engineers from all over the country to meet together, to display their work, and to examine and purchase the latest workshop equipment and materials for their use.

Such is the extent and variety of the exhibits that there can be hardly any doubt, we think, that the success which has signalised the Exhibition in previous years will be fully maintained if not, indeed, eclipsed on the present occasion. Considerable skill and ingenuity have been brought to bear on the arrangement of the many exhibits and the utilisation of every corner of the hall, as well as in regard to the colour scheme of some of the leading stands, and especially those in the centre of the area. As before, the competition section contains many ingenious locomotive models, one of the finest being the working model of a G.W.R. " King George V " locomotive, No. 6000, exhibited by Mr. H. E. A. Tolley, of Oxford. In this group, too, are seen the model of a 3½ in. gauge L.N.E.R. " Pacific " locomotive and tender, the work of Mr. W. G. Smith (N.8), almost alongside which is the exhibit entered as free lance 2½-in. gauge, 4-8-2 express passenger locomotive, coal fired, shown by Mr. C. Y. Radford (S.W.6). A working model of an electric-light plant by Mr. B. Low (W.4) and a steam-driven coal-fired road locomotive, by Mr. E. A. Hamilton (Dunstable), are notable features of the general engineering group. Some particularly fine work is also to be seen in the group devoted to sailing ship models. One of the most interesting exhibits in the loan section—which, by the by, is remarkably comprehensive—is a model of the new Underground booking hall for the Charing Cross scheme, lent by Mr. A. G. Waller.

The leading clubs interested in models make, as on previous occasions, a very fine show, particularly the Society of Model and Experimental Engineers, whose exhibits occupy the full length of one end of the hall and include as its most attractive feature a running model railway. The Model Railway Club, too, has many fine exhibits; and a small but distinctly attractive collection is on view at the stand of the Finchley Model Engineering Society. Mention should also be made of the exhibits shown by the Wimbledon and District, Ilford and District, Streatham Common, and West Essex Model Railway Clubs, and also the Model Power Boat Association and the Model Aircraft Club. A notable feature of this section is the exhibit shown by the British Puppet and Model Theatre Guild—this is, of course, of the " penny plain, tuppence coloured " order, but has nothing to do with transport.

At the stand of Bassett-Lowke Limited there is to be seen a working gauge " O " model railway, demonstrating the firm's standard productions, arranged in an attractive scenic setting, with day and night effects; also a new controller for electric railways—the new gauge " O " tank locomotive in clockwork, a.c. and d.c. electric. Buck & Ryan, tool manufacturers, Euston Road, N.W.1, show a remarkably fine assortment of tools and gadgets; whilst at the stand of Bond's o' Euston Road Limited there is to be seen a very large range of locomotive models and a special display of L.B.S.C. design locomotive castings. Model aircraft enthusiasts will find much to interest them in the model Aircraft Clubs' exhibits which are mostly of the highly popular rubber-driven type, although there are also to be seen compressed air, petrol, and steam-driven examples.

The stands of Stuart Turner Limited, Henley-on-Thames, and Mills Bros., Sheffield, are both splendidly equipped, an electrically constructed scale model railway being the great attraction of the latter. Not the least attractive stand in the exhibition is that of The Railway Publishing Co. Ltd., of 33, Tothill Street, S.W.1, where *The Railway Magazine*, and its associated journals, are on view and may be purchased.

CONTRACTS AND TENDERS

The Birmingham Railway Carriage & Wagon Co. Ltd. has secured an order through the Crown Agents for 4 bogie flat wagons of 30 tons capacity for the Palestine Railways.

The Gloucester Railway Carriage & Wagon Co. Ltd., has secured an order from the Crown Agents for 32 bogie low-sided wagons of 25 tons capacity, and 3 ft. 6 in. gauge for the Gold Coast Government Railway.

The Metropolitan-Cammell Carriage Wagon & Finance Co. Ltd. has secured an order from the Crown Agents for two second-class bogie carriage underframes for the Hong Kong Government Railway (Kowloon-Canton Railway, British Section).

Important L.M.S. Locomotive Contracts

Sir W. G. Armstrong Whitworth & Co. (Engineers) Ltd. has received an order for 100 standard 4-6-0 mixed traffic locomotives for the London Midland & Scottish Railway.

The Vulcan Foundry Limited has also received an order for 50 similar locomotives for the L.M.S.R., in addition to the 50 previously ordered and now in course of delivery.

This order is a tribute to the success of Mr. W. A. Stainer's design of general utility locomotive, which was illustrated and described in THE RAILWAY GAZETTE of August 10. They have 6 ft. driving wheels, two outside cylinders 18½ in. diameter by 28 in. stroke, 1,844 sq. ft. of heating surface, including 228 sq. ft. of superheater surface, a grate area of 28 sq. ft. The boiler pressure is 225 lb. per sq. in., the tractive effort at 85 per cent. of this pressure 25,455 lb., and the weight in working order 72 tons, or 126 tons with a 4,000-gal. tender.

Nasmyth Wilson has secured an order from the Madras & Southern Mahratta Railway for three locomotive boilers, super-heated, MH/F class.

Bayliss, Jones & Bayliss Limited has received an order from the South African Railways Administration for fishbolts and nuts to a total value of £1,657.

The South African Railways and Harbours Administration is calling for tenders, to be presented in Johannesburg by October 8, for the supply of bridgework for the Naauwpoort-De Aar and Springfontein-Naauwpoort sections. Further details may be obtained from the Department of Overseas Trade.

The South African Railways and Harbours Administration is calling for tenders, to be presented in Johannesburg by September 24, for the supply of copper and steel plates for locomotive boilers. Further details may be obtained from the Department of Overseas Trade.

The Bombay, Baroda & Central India Railway is prepared to receive up to noon on September 21 tenders for the supply of a 400 kW heavy-oil engine-driven generating set. Tenders must be made on forms, copies of which can be obtained at the White House, 91, Petty France, Westminster, S.W.1.

The Commercial Secretary to H.M. Legation at Athens reports that the Hellenic Electric Railways Company is calling for tenders, to be presented in Greece by October 17, for the supply of 11 electric coaches for use on the Piraeus-Perama Line. Further details may be obtained from the Department of Overseas Trade.

Forthcoming Meetings

Sept. 25 (*Tues*).—**Ottoman Railway from Smyrna to Aidin** (Ordinary General), Winchester House, Old Broad Street, E.C.2, at 11 a.m.

Thomas Telford

During the past week press and radio have combined to pay tribute to the work of Thomas Telford on the occasion of the centenary of his death on September 2, 1834. He was born on August 9, 1757, the son of a Dumfriesshire shepherd. With the help of borrowed books he developed his natural genius for engineering and became the foremost civil engineer of his period and one of the greatest of all time. His whole working life was devoted to the service of transport in the construction of notable roads, canals, and bridges which were characterised by boldness of conception and soundness of design. Indirectly his influence on early railway engineering must have been considerable as he proved the desirability of providing roads with solidly laid foundations.

Samuel Smiles records in his "Life of Thomas Telford" that in 1827, when the formation of locomotive railways was extensively discussed, and schemes were set on foot to construct them between several of the larger towns, Telford was about seventy years old. "Desirous of limiting the range of his business rather than extending it, he declined to enter upon this new branch of engineering. Yet, in his younger days, he had surveyed numerous lines of railway—amongst others, one as early as the year 1805, from Glasgow to Berwick, down the vale of the Tweed. A line from Newcastle-on-Tyne to Carlisle was also surveyed and reported on by him some years later; and the Stratford and Moreton Railway was actually constructed under his direction." Smiles adds, that he made use of railways in all his large works of masonry, for the purpose of facilitating the haulage of materials to the points at which they were required to be deposited or used. In a paper by Telford on the Inland Navigation of the County of Salop, contained in "The Agricultural Survey of Shropshire," he spoke of the judicious use of railways, and recommended that in all future surveys "it be an instruction to the engineers that they do examine the county with a view of introducing iron railways wherever difficulties may occur with regard to the making of navigable canals." When the project of the Liverpool & Manchester Railway was commenced, Smiles states that Telford was offered the appointment of engineer; but he declined, "partly because of his advanced age, but also out of a feeling of duty to his employers, the canal companies, stating that he could not lend his name to a scheme which, if carried out, must so materially affect their interests."

In a letter to the editor of *The Times* (published yesterday) the Rev. Reginald B. Fellows pointed out that on the second page of *The Times* of December 21, 1824, the prospectus of the Kentish Railway Company was published in full, and the name of Thomas Telford was given as engineer. This, he added, was undoubtedly the first prospectus to be published of a passenger railway from London. The line was planned to run from London to Dover and Sandwich, by way of Woolwich, Chatham and Canterbury; there were to be branches to Maidstone and to Margate. The capital was £1,000,000, and the London board consisted of 18 directors. The line was to be worked "by loco-motive machines," but the company would "in addition thereto make use of the assistance of horses." The project is believed to have been abandoned because the directors reluctantly came to the conclusion that the immediate prospects of the line were insufficient to justify them in continuing to ask the public to subscribe the necessary capital.

Although his popularity among his brother engineers was tempered by the fact that they considered he reduced the standard of the profession by his extremely modest charges, his eminence was such that he was naturally invited to become the first President of the Institution of Civil Engineers, an office which he assumed on March 21, 1820. On June 14 of last year this institution opened a centenary exhibition of his plans, drawings, models, and personal belongings. Telford was buried in Westminster Abbey, where there is also an excellent statue of him, but perhaps his greatest monument is to be found in bridges built by him in many parts of Great Britain, the most famous of which is his suspension bridge over the Menai Straits.

NOTES AND NEWS

London " Underground " Wages.—The claim of the railway employees of the London Passenger Transport Board for restoration of the wage cuts made in September, 1932, will be discussed by representatives of the board and the railway unions on September 11.

Western Airways Secures Air Mail Sub-Contract.—Norman Edgar Western Airways Limited has secured a sub-contract from Railway Air Services Limited to carry air mails between Cardiff and Bristol. Previous to this arrangement close co-ordination between the passenger services of the two companies had been achieved.

Improvements for Handling British Broccoli Traffic.—The G.W.R. announces that, as a result of the increase during the last two years of 72 per cent. in the tonnage of broccoli loaded at the Ponsondane sidings, Penzance, it is proposed further to extend the sidings in time for the 1934-5 traffic. In the 1930-1 season, 17,878 tons were despatched, which increased to 32,248 tons during last season.

M.C.W. Bodies for London Transport Buses.—The body of the latest Q-type A.E.C. double deck bus to be placed in service by the London Passenger Transport Board, of which we reproduced two photographs on page 345 of last week's issue, was recently built at Addlestone by Weymann's Motor Bodies (1925) Limited. The vehicle is a 56-seater with a double spiral staircase. The central entrance is provided with special sliding doors.

Canadian National Earnings.—For the month of July, 1934, gross earnings of the Canadian National Railways amounted to $13,993,275, an increase of $710,679 in comparison with July, 1933. Operating expenses ($13,304,830) at the same time advanced by $842,700, leaving net earnings $132,021 lower, at $688,445. Aggregate gross earnings from January 1 to July 31, 1934, were $93,490,022, an improvement of $12,732,555 on the first seven months of 1933, and there were net earnings of $5,066,985, contrasting with a deficit of $2,158,516 for the first seven months of 1933.

G.W.R. Improvement Works.—At Lavernock, between Penarth and Cadoxton, in South Wales, the G.W.R. proposes to extend the platforms in order to cope with the considerable development in excursion traffic, especially at week-ends, when as many as 12,000 passengers use the station. Other G.W.R. improvements are to be carried out at Oxford, where the steam-driven pumps and shops' machinery in the locomotive depot are to be replaced by an electrically-operated plant; at Plymouth, where the timber quay on the north side of Millbay pier is to be renewed in reinforced concrete; and at King's dock, Swansea, where the cranage facilities are to be improved by the provision of two 3-ton electric luffing cranes in place of the four existing 2-ton hydraulic appliances.

Launch of the New Cunarder.—In connection with the launching of the " 534 " by Their Majesties the King and Queen on Wednesday, September 26, at Clydebank, the L.M.S. is running special trains from all parts of Scotland to Glasgow.

A Further New G.W.R. Halt.—A new halt at Haughton, between Baschurch and Rednal, will be opened by the G.W.R. on Saturday, September 22. The halt will be served by all the local stopping trains from Shrewsbury and Gobowen, and cheap ticket arrangements will be in force to surrounding stations. This will be the nineteenth new halt to be opened this year by the G.W.R.

Poppet Valve Manufacture.—The North British Locomotive Co. Ltd. informs us that it has instituted a new department at the Hyde Park Works, Glasgow, and has installed therein new machines and plant to meet the changing demands due to the growing adoption of poppet valve gears and similar accessories for locomotives. The effect of the alterations will be to centralise the work and thereby to facilitate accuracy in production. This does not involve the construction of new buildings or the extension of existing ones, as erroneously reported in the press.

The Week's Road Accidents.—The Secretary to the Ministry of Transport has issued the following return for the week ended August 25 of persons killed or injured in road accidents :—

	Killed in accidents reported during the week	Reported during the week as having died as the result of accidents occurring in previous weeks	Injured in accidents reported during the week
	No.	No.	No.
England ...	114	20	4,756
Wales ...	2	1	222
Scotland ...	18	4	481
	134	25	5,459

The total fatalities of the week, as the result of road accidents, were, therefore, 159, as compared with 155 for the previous week.

L.M.S. Success with Registered Transit Scheme.—Striking success is reported by the L.M.S.R. with the Green Arrow registered transit scheme for merchandise, whereby for a small extra charge individual consignments are specially watched and expedited throughout their journeys. The scheme has just completed its first year of operation on the L.M.S.R., and during this period over 102,000 Green Arrow consignments have been forwarded. Whereas in the first month of its introduction 737 consignments were dealt with under this scheme, the number has progressively increased to more than 17,500 in the most recent month.

U.S.A. Railways Capital Expenditure.—From 1922 to 1932 inclusive, Class 1 railways of the U.S.A. have spent $7,700,095,000 in enlarging and improving their properties.

Railway Features of the Mozambique Treaty.—Negotiations for the renewal of the Mozambique Treaty were resumed at Lourenço Marques on September 6. One of the principal outstanding points which are being discussed is with regard to railway traffic from Lourenço Marques to the Rand and the proportion of imports passing through that port.

Bekonscot Model Railway.—The model village, countryside and railway system at Beaconsfield was recently visited by the Queen and Princess Elizabeth. An illustrated description of the Bekonscot model was given in THE RAILWAY GAZETTE of March 31, 1933. It is open to the public on Sundays and certain Saturdays on payment of 1s. and the proceeds go to aid the Railway Benevolent Institution.

Death of Viscount Devonport.—We regret to record the sudden death on September 5, at Kinloch, Dunkeld, Perthshire, of the Rt. Hon. Hudson Ewbanke, Viscount Devonport, aged 78, the first Chairman of the Port of London Authority. As Mr. Hudson Kearley he was appointed in 1905 Parliamentary Secretary to the Board of Trade, and in June, 1908, was created a baronet. When in 1909 he was appointed Chairman of the newly-constituted Port of London Authority, he resigned his position in the Government. He remained Chairman of the Authority until 1925. He was created Baron Devonport in 1910, and was made a Viscount in 1917 for his war services as Food Controller.

The Future of Railways Foretold?—Speaking at the Leeds Rotary Club luncheon on August 31, Mr. John Allcock, Junior, of the Hunslet Engine Co. Ltd., said that the absorption of heat value in the coal used in the ordinary steam locomotive was only 7 per cent. In this connection, experiments were, he said, now being made with high-pressure locomotives and with the diesel engine to secure increase in efficiency. A small diesel shunting engine worked at about one-third the cost of a steam locomotive and saved £10 a week. The chief problem with the diesel engine was to devise efficient transmission. Hydraulic clutches appeared to be proving satisfactory and progress had also been made with an air-cooled friction clutch. Mr. Allcock prophesied that if satisfactory diesel locomotives could be built, British railways would return to the supremacy they had enjoyed before road transport had gained its existing great advantage.

British and Irish Railway Traffic Returns

GREAT BRITAIN	Totals for 35th Week			Totals to Date		
	1934	1933	Inc. or Dec.	1934	1933	Inc. or Dec.
	£	£	£	£	£	£
L.M.S.R. (6,940¾ mls.)						
Passenger-train traffic...	581,000	578,000	+ 3,000	17,061,000	16,798,000	+ 263,000
Merchandise, &c. ..	446,000	431,000	+ 15,000	15,354,000	14,168,000	+1,186,000
Coal and coke ...	229,000	208,000	+ 21,000	7,812,000	7,465,000	+ 347,000
Goods-train traffic ...	675,000	639,000	+ 36,000	23,166,000	21,633,000	+1,533,000
Total receipts	1,256,000	1,217,000	+ 39,000	40,227,000	38,431,000	+1,796,000
L.N.E.R. (6,339 mls.)						
Passenger-train traffic...	400,000	382,000	+ 18,000	10,979,000	10,809,000	+ 170,000
Merchandise, &c. ...	320,000	303,000	+ 17,000	10,657,000	9,787,000	+ 870,000
Coal and coke ...	233,000	207,000	+ 26,000	7,845,000	7,158,000	+ 687,000
Goods-train traffic ...	553,000	510,000	+ 43,000	18,502,000	16,945,000	+1,557,000
Total receipts	953,000	892,000	+ 61,000	29,481,000	27,754,000	+1,727,000
G.W.R. (3,750 mls.)						
Passenger train traffic...	267,000	264,000	+ 3,000	7,203,000	7,231,000	— 28,000
Merchandise, &c. ...	189,000	178,000	+ 11,000	6,189,000	5,738,000	+ 451,000
Coal and coke ...	104,000	98,000	+ 6,000	3,420,000	3,374,000	+ 46,000
Goods-train traffic ...	293,000	276,000	+ 17,000	9,609,000	9,112,000	+ 497,000
Total receipts	560,000	540,000	+ 20,000	16,812,000	16,343,000	+ 469,000
S.R. (2,176 mls.)						
Passenger-train traffic...	383,000	381,000	+ 2,000	10,426,000	10,285,000	+ 141,000
Merchandise, &c. ...	71,000	68,000	+ 3,000	2,198,500	2,099,500	+ 99,000
Coal and coke ...	38,000	34,000	+ 4,000	1,081,500	1,019,500	+ 62,000
Goods-train traffic ...	109,000	102,000	+ 7,000	3,280,000	3,119,000	+ 161,000
Total receipts	492,000	483,000	+ 9,000	13,706,000	13,404,000	+ 302,000
Liverpool Overhead ... (6½ mls.)	1,193	1,205	— 12	40,441	39,844	+ 597
Mersey (4½ mls.) ...	3,677	3,873	— 196	142,403	138,277	+ 4,126
*London Passenger Transport Board ...	523,200	518,800	+ 4,400	4,713,900	4,667,000	+ 46,900
IRELAND						
Belfast & C.D. pass. (80 mls.)	3,533	3,447	+ 86	91,253	92,976	— 1,723
" " goods	504	388	+ 116	17,948	18,157	— 209
" " total	4,037	3,835	+ 202	109,201	111,133	— 1,932
Great Northern pass. (562 mls.)	15,750	13,400	+ 2,350	352,550	260,900	+ 91,650
" " goods	10,200	9,850	+ 350	288,700	214,650	+ 74,050
" " total	25,950	23,250	+ 2,700	641,250	475,550	+ 165,700
Great Southern pass. (2,158 mls.)	31,710	31,907	— 197	853,475	836,305	+ 17,170
" " goods	32,624	31,820	+ 804	1,110,320	1,037,458	+ 72,862
" " total	64,334	63,727	+ 607	1,963,795	1,873,763	+ 90,032

* 9th Week. the receipts for which include those undertakings not absorbed by the L.P.T.B. in the corresponding period last year; last year's figures are however adjusted for comparative purposes

British and Irish Railway Stocks and Shares

Stocks	Highest 1933	Lowest 1933	Prices Sept. 5, 1934	Prices Rise/Fall
G.W.R.				
Cons. Ord. ...	55½	31	50	—
5% Con. Prefce. ...	109¾	69½	112½	+½
5% Red.Pref.(1950)	109¼	87½	108½	—
4% Deb.	108 15/16	99¼	109½	—
4½% Deb.... ...	108	100¾	111½	—
4½% Deb.... ...	116	106	119½	+1
5% Deb.	128	117¼	130	—
2½% Deb.... ...	65	60	69½	—
5% Rt. Charge ...	124	111½	128½	+1
5% Cons. Guar. ...	122	103	125½	+1
L.M.S.R.				
Ord.	29⅞	12⅛	22	—
4% Prefce. (1923)	51	17	46½	—
4% Prefce. ...	72	33¼	78½	−½
5% Red. Prf. (1955)	93	47¼	99½	—
4% Deb.	103¼	89½	104½	+½
5% Red.Deb.(1952)	114	105	113½	—
4% Guar.	97¼	68⅝	100	—
L.N.E.R.				
5% Pref. Ord. ...	22½	7¾	16¾	+½
Def. Ord.	10¾	4⅛	8½	+⅜
4% First Prefce. ...	65½	19⅝	62½	—
4% Second Prefce.	40½	12¼	29½	+½
5% Red.Pref.(1955)	83¾	27	83	—
4% First Guar. ...	94¾	58¼	94	—
4% Second Guar.	89¼	48	88½	—
3% Deb.	77	60¼	77	—
4% Deb.	102¾	80	102½	+½
5% Red.Deb.(1947)	112	102½	112½	+1
4½% Sinking Fund Red. Deb.	107½	98¾	108½	+1
SOUTHERN				
Pref. Ord.... ...	71	27¾	73	—
Def. Ord.	24⅜	9⅝	23½	+½
5% Prefce. ...	107 11/16	74	112	—
5% Red.Pref.(1964)	107¾	78⅞	111½	—
5% Guar. Prefce.	124¼	102¾	124½	—
5% Red.Guar.Pref. (1957)	115⅝	103½	115	+1
4% Deb.	107½	96¾	108	+½
5% Deb.	126½	114¼	129½	—
4% Red. Deb. 1962–67	107¼	100	108½	—
BELFAST & C.D.				
Ord.	6		5	—
FORTH BRIDGE				
4% Deb.	99½	95½	102½	—
4% Guar. ...	98½	94	102½	—
G. NORTHERN (IRELAND)				
Ord.	7½	3½	5	—
G. SOUTHERN (IRELAND)				
Ord.	28	16	14	—
Prefce.	24	12⅛	16½	—
Guar.	42	16¾	46	—
Deb.	60	30⅞	63	—
L.P.T.B.				
4½% "A" ...	117⅞	112	121½	+1½
5% "A"	127¼	119¼	130½	+1
4½% "T.F.A." ...	111¼	106	110	—
5% "B"	122½	114	125	+1
"C"	86¾	74½	80	—
MERSEY				
Ord.	16¼	5	12	—
4% Perp. Deb. ...	83	63⅞	86½	—
3% Perp. Deb. ...	62	51	64½	—
3% Perp. Prefce....	50⅝	27	48½	−1

RAILWAY AND OTHER REPORTS

Metropolitan Assented Stock.—Interest on this stock, which was constituted by Section 89 of the London Passenger Transport Act, 1933, will be paid on September 22, at the full rate of 3¼ per cent., less tax, for the year ended June 30, 1934.

Sorocabana Railway.—The accounts for 1933 show that, including the amount brought in, there was at December 31 a balance of some £71,000, representing chiefly collections in milreis of interest and dividends on the company's Brazilian investments. During the two years ended December 31, 1933, restrictions on Brazilian exchange prevented the company remitting to London any substantial part of these milreis. In August, 1933, the company deposited with the Banco do Brasil a sum in currency for remission to London by 72 monthly instalments of £528 under the Brazilian Commercial Arrears of Exchange Scheme. Payments have been received regularly since September, 1933. Together with other sterling funds, these remittances have made possible a distribution to holders of the 5½ per cent. first debentures at the rate of ¼ per cent. on April 1, 1934, on account of the coupons due on and since October 1, 1932.

Forthcoming Events

Sept. 5–12.—British Association, at Aberdeen.

Sept. 6-15.—"Model Engineer" Exhibition, at Royal Horticultural Hall, Vincent Square, London, S.W.1, 11 a.m. to 9.30 p.m.

Sept. 22 (*Sat.*).—Permanent Way Institution (Manchester-Liverpool), at Blackpool, 3 p.m. "Tunnel Repair Work," by Mr. G. P. Bull.

Oct. 2 (*Tues.*).—Retired Railway Officers' Society, in Room 300, Great Eastern Hotel, Liverpool Street, London, E.C.2, 2.30 p.m. Ordinary Meeting.

BRITISH RAILWAY STATISTICS

"The Railway Gazette" monthly table of freight and passenger traffic figures for May, 1934, as compared with the corresponding period in 1933, compiled from the Ministry of Transport Statement No. 174.

Description	Great Britain*	Great Western	London & North Eastern	London Midland & Scottish	Southern
PASSENGER TRAIN TRAFFIC—					
Number of passenger journeys (excluding season-ticket holders)	101,525,348	7,850,391	15,103,131	24,721,544	18,115,324
Increase (+) or decrease (−)	+ 8,142,349	+ 947,159	+ 1,651,015	+ 2,717,941	+ 1,341,916
Passenger receipts (excluding season-ticket holders)	£4,247,881	£571,360	£830,623	£1,379,301	£919,473
Increase (+) or decrease (−)	+ £680,378	+ £94,124	+ £142,245	+ £269,892	+ £127,261
Season-ticket receipts	£692,734	£45,452	£124,436	£189,278	£218,432
Increase (+) or decrease (−)	− £55,041	− £8,599	− £12,611	− £19,014	− £8,133
Parcels and miscellaneous traffic receipts (excluding parcels post)	£1,134,987	£199,569	£329,743	£441,328	£138,365
Increase (+) or decrease (−)	− £3,603	− £9,509	+ £2,457	+ £14,626	− £2,067
FREIGHT TRAIN TRAFFIC—					
Freight traffic (tons) (excluding free-hauled)	20,897,370	4,996,306	9,489,169	9,440,218	1,253,279
Increase (+) or decrease (−)	+ 1,558,159	+ 27,203	+ 1,108,047	+ 641,108	+ 75,524
Net ton-miles (excluding free-hauled)	1,138,106,504	209,191,051	389,635,716	453,838,726	53,745,299
Increase (+) or decrease (−)	+ 81,958,715	+ 5,307,621	+ 43,282,312	+ 27,855,598	+ 3,528,563
Average length of haul (miles) (excluding free-hauled)	54·46	41·87	41·06	48·08	42·88
Increase (+) or decrease (−)	− 0·15	+ 0·84	− 0·27	− 0·33	+ 0·24
Freight traffic receipts	£6,451,400	£1,116,000	£2,071,000	£2,675,000	£375,330
Increase (+) or decrease (−)	+ £283,860	+ £7,000	+ £130,400	+ £112,000	+ £20,812
Receipts per ton-mile	1·360d.	1·28d.	1·28d.	1·42d.	1·68d.
Increase (+) or decrease (−)	− 0·042d.	− 0·03d.	− 0·07d.	− 0·03d.	− 0·02d.
Freight train-loads—					
Average train-load (tons)	121·97	126·58	130·19	117·65	103·71
Increase (+) or decrease (−)	+ 2·30	− 1·01	+ 4·42	+ 1·42	+ 4·67
Net ton-miles—					
Per train engine-hour	1,012·35	1,060·80	1,066·79	979·20	855·90
Increase (+) or decrease (−)	− 8·54	− 12·61	+ 11·15	− 35·33	+ 43·99
Per shunting-hour	832·93	755·11	920·49	857·47	562·30
Per total engine-hour	456·96	441·11	494·13	457·15	339·35
Net ton-miles per route-mile per working day	2,499	2,465	2,714	2,881	1,134
Increase (+) or decrease (−)	+ 176	+ 66	+ 291	+ 169	+ 91
Wagon-miles. Total	337,146,416	61,002,536	116,874,423	139,993,549	17,187,407
Increase (+) or decrease (−)	+ 19,224,847	+ 2,101,045	+ 9,212,220	+ 7,174,325	+ 621,969
Percentage of loaded to total	66·84	68·71	63·98	68·54	66·35
Wagons per train—					
Total	33·94	34·02	34·76	33·75	31·34
Increase (+) or decrease (−)	+ 0·19	− 0·09	+ 0·21	+ 0·27	—
Loaded	22·69	23·38	22·24	23·13	20·79
Empty	11·25	10·64	12·52	10·62	10·55
Train-miles. Coaching—					
Per train-hour	15·17	13·97	14·23	14·68	17·69
Per engine-hour	12·12	11·11	11·12	11·13	14·45
Train miles. Freight—					
Per train-hour	9·75	10·15	9·58	9·75	10·04
Per engine-hour	3·75	3·51	3·84	3·89	3·22
Engine miles. Total	44,443,062	7,031,252	12,203,072	16,383,029	5,940,766
Increase (+) or decrease (−)	+ 1,875,201	+ 221,990	+ 623,505	+ 852,758	+ 165,867
Mileage run by engines. Total train-miles—					
Coaching	22,123,997	2,995,216	5,047,001	7,102,773	4,314,246
Freight	9,934,281	1,793,319	3,362,094	4,148,153	548,425
Engine-hours in traffic. Total	4,684,820	807,562	1,400,211	1,792,543	487,639
Increase (+) or decrease (−)	+ 227,291	+ 21,203	+ 82,065	+ 106,868	+ 16,444
Shunting miles per 100 train-miles—					
Coaching	7·50	6·94	6·50	8·31	8·14
Freight	73·19	83·43	69·55	68·05	96·76

* All standard-gauge railways

Passenger Traffic Statistics: Number of Journeys, Receipts, and receipts per journey (excluding Season-Ticket Holders)—May, 1934

Subject	Great Britain	Great Western	London & North Eastern	London Midland & Scottish	Southern	Cheshire Lines Committee	Liverpool Overhead	London Passenger Transport Board†	Mersey
Full fares—									
Passenger journeys	30,142,362	746,167	1,232,628	1,742,711	2,798,487	24,466	152,207	22,541,007	90,502
Gross receipts	£891,024	£82,647	£125,650	£143,135	£202,405	£3,339	£1,609	£314,770	£1,642
Receipts per passenger journey	7·09d.	26·58d.	24·46d.	19·71d.	17·36d.	32·75d.	2·54d.	3·35d.	4·35d.
Reduced fares—									
Excursion and week-end—									
Passenger journeys	42,324,877	4,827,119	9,492,828	15,109,101	9,226,799	457,786	151,127	1,315,265	635,780
Gross receipts	£2,698,142	£414,092	£585,945	£1,032,613	£554,285	£32,616	£1,460	£30,464	£10,340
Receipts per passenger journey	15·30d.	20·59d.	14·81d.	16·40d.	14·42d.	17·10d.	2·32d.	5·56d.	3·90d.
Workmen—									
Passenger journeys	24,599,426	1,750,192	3,261,944	6,556,277	5,222,618	227,434	180,362	6,357,384	186,292
Gross receipts	£354,563	£25,854	£52,104	£104,100	£85,553	£3,971	£1,466	£69,517	£1,820
Receipts per passenger journey	3·46d.	3·55d.	3·83d.	3·81d.	3·93d.	4·19d.	1·95d.	2·62d.	2·34d.
Other descriptions—									
Passenger journeys	4,440,574	521,635	1,112,772	1,305,279	865,940	59,613	2,772	468,426	13,801
Gross receipts	£278,021	£41,038	£62,094	£87,921	£75,439	£3,418	£13	£4,542	£185
Receipts per passenger journey	15·03d.	18·88d.	13·39d.	16·17d.	20·91d.	13·76d.	1·13d.	2·33d.	3·22d.
Total—									
Passenger journeys	101,525,348	7,850,391	15,103,131	24,721,544	18,115,324	769,473	486,468	30,682,082	926,375
Gross receipts	£4,247,881	£571,360	£830,623	£1,379,301	£919,473	£43,551	£4,548	£419,293	£13,987
Receipts per passenger journey	10·04d.	17·47d.	13·20d.	13·39d.	12·18d.	13·58d.	2·24d.	3·28d.	3·62d.

† Includes passengers originating on the railway undertakings, and on the Whitechapel and Bow Joint Railway

LEGAL AND OFFICIAL NOTICES

IN THE COURT OF THE RAILWAY RATES TRIBUNAL.

Road and Rail Traffic Act, 1933. Agreed Charges

NOTICE IS HEREBY GIVEN that Applications for the approval of Agreed Charges under the provisions of Section 37 of the Road and Rail Traffic Act, 1933, short particulars of which are set out in the Schedule hereto, have been lodged with the Railway Rates Tribunal.

The said Applications may be inspected at the Office of the Tribunal, 2, Clement's Inn, Strand, London, W.C.2, at any time during office hours and at the following places :—

LONDON.—Railway Clearing House, 123, Seymour Street, N.W.1.

BIRMINGHAM.—District Goods Manager's Office, Snow Hill, Great Western Railway.

CARDIFF.—Divisional Superintendent's Office, Great Western Railway.

EXETER.—Western Divisional Superintendent's Office, Southern Railway.

LEEDS.—District Goods Manager's Office, Wellington Street, London & North Eastern Railway.

LEICESTER.—District Goods and Passenger Manager's Office, London Midland & Scottish Railway.

MANCHESTER.—District Goods Manager's Office, Hunt's Bank, London Midland & Scottish Railway.

SOUTHAMPTON.—Southern Divisional Superintendent's Office, Southampton West, Southern Railway.

YORK.—Goods Manager's Office, London & North Eastern Railway.

ABERDEEN.—District Goods and Passenger Manager's Office, London Midland & Scottish Railway.

EDINBURGH.—District Goods and Passenger Manager's Office, Waverley Station, London & North Eastern Railway.

GLASGOW.—Commercial Manager's Office, Central Station, London Midland & Scottish Railway.

A copy of each Application lodged with the Tribunal can be obtained from Mr. G. Cole Deacon, Secretary, Rates and Charges Committee, 35, Parliament Street, Westminster, London, S.W.1, price 1s., post free.

Notices of objection by any parties entitled to object to the approval of any of the said Agreed Charges must state concisely the grounds of objection and must be filed at the office of the Registrar, 2, Clement's Inn, Strand, London, W.C.2, on or before the 29th day of September, 1934, and a copy thereof on or before the same day served on or sent by registered post to Mr. G. Cole Deacon, at the above address. A separate Notice must be filed and served in respect of each Application.

Each Notice filed must be on foolscap size paper and must be stamped with an adhesive fee stamp for 2s. 6d. (which can be purchased at the office of the Tribunal only). If sent by post for filing each Notice must be accompanied by a Postal Order for 2s. 6d. payable to the Registrar when a stamp will be affixed at the office. A Notice by a Representative Body of Traders must contain a statement of the facts upon which such Body claims to represent a substantial number of traders interested in, or likely to be affected by the decision on, the application.

Four additional copies of each Notice must be lodged with the original at the office of the Registrar.

T. J. D. ATKINSON,
Registrar.

4th September, 1934.

Number of Application	Date of Lodgment.	Parties to Agreement	Nature of Agreed Change
1934, No. 109	Aug. 1, 1934	T. S. MYTTON, Welshpool, and the G.W., L. & N.E., L.M. & S. and Southern Railway Cos. This application, by leave granted under Rule 4, relates also to Agreed Charges with other Registered Bacon Curers in Great Britain as specified therein	Per pig. Live pigs consigned to Registered Bacon Curers or their Agents.
1934, No. 110	July 31, 1934	NEWTON, CHAMBERS & CO. LTD., Thorncliffe, near Sheffield, and the L. & N.E. and L.M. & S. Railway Cos.	Per package. "Izal" Toilet Rolls.
1934, No. 111	July 31, 1934	PETER KEEVIL & SONS LTD., London, and the G.W., L. & N.E., L.M. & S. and Southern Railway Cos.	Per ton. Groceries and Provisions, Preserves, Biscuits, Confectionery, Tea, Paper for wrapping and String or Twine.
1934, No. 112	July 31, 1934	T. ROBERTS & SONS (LEICESTER) LTD., Leicester, and the L. & N.E. and L.M. & S. Railway Cos.	Per ton. Boots and Shoes.
1934, No. 113	July 31, 1934	SPRING & CO. LTD., Brigg, Lincolnshire, and the L. & N.E. Railway Co.	Per ton. Bottled Fruit, Canned Fruit, Honey, Jam, Lemon Curd, Marmalade, Fruit Cordials and British Wines.
1934, No. 114	July 31, 1934	BETTERWEAR PRODUCTS LIMITED, Romford, Essex and the L. & N.E. and L.M. & S. Railway Cos.	Per package. Brushes and Polishes.
1934 No. 115	July 31, 1934	ALFRED COHEN & SON, London, and the G.W., L. & N.E., L.M. & S. and Southern Railway Cos.	Per package. Clothing.
1934, No. 116	July 31, 1934	THE IMPERIAL TOBACCO COMPANY (of Great Britain and Ireland) LIMITED, Bedminster, Bristol, and the L. & N.E. and L.M. & S. Railway Cos.	Per package. Cigarettes and Tobacco.
1934, No. 117	Aug. 31, 1934	WHITELEY MUIR & ZWANENBERG LIMITED, London, and the G.W., L. & N.E., L.M. & S. and Southern Railway Cos.	Per pig. Live pigs consigned to Registered Bacon Curers or their Agents.
1934, No. 118	Aug. 31, 1934	CLEEVES LIMITED, Clapham, London, and the G.W., L. & N.E., L.M. & S. and Southern Railway Cos.	Per ton. Confectionery.
1934 No. 119	Aug. 31, 1934	D. FREEDER & CO., London, and the G.W., L. & N.E., and L.M. & S. Railway Cos.	Per ton. Paper for Wrappering, Crepe Paper and articles manufactured from Paper, such as Paper Serviettes and Paper Dish Covers.
1934, No. 120	Aug. 31, 1934	THE HALFORD CYCLE CO. LTD., Birmingham, and the G.W. and L.M. & S. Railway Cos.	Per ton. Bicycles and Accessories, Batteries and Battery Parts, Electric Fittings, Soap and Oil in small tins, and Toys.
1934, No. 121	Aug. 31, 1934	HEPWORTH & GRANDAGE LIMITED, Bradford, and the L. & N.E. and L.M. & S. Railway Cos.	Per ton. Motor Engine Parts such as pistons and rings.
1934, No. 122	Aug. 31, 1934	HIGHAM, CAINE & CO. LTD. (HIGHCO STORES), Manchester, and the Cheshire Lines Committee, G.W., L. & N.E., and L.M. & S. Railway Cos.	Per ton. Clothing, Drapery, and General Stores Wares.
1934, No. 123	Aug. 31, 1934	KIA-ORA LIMITED, Blackfriars, London, and the G.W., L. & N.E., L.M. & S., and Southern Railway Cos.	Per ton. Cordials, British Wines, Oranges, Lemons and similar Fruit.
1934, No. 124	Aug. 31, 1934	RECKITT & SONS LTD., Hull, and the L. & N.E. and and L.M. & S. Railway Cos.	Per ton. Polishes; Stains; Dressings; Grocery articles, such as Blue, Starch and Black Lead; Bath Salts; Cleansing Powders; Disinfectants; Dyes; Insecticides; Enamels; Hardware; Toilet Paper and Advertising Matter.
1934, No. 125	Aug. 31, 1934	THOMAS HEDLEY & CO. LTD., Newcastle-on-Tyne, and the L. & N.E. Railway Co.	Per ton. Candles, Soap and Soap with articles for advertisement.
1934, No. 126	Aug. 31, 1934	C. & J. CLARK LIMITED, Street, Somerset, and the Somerset and Dorset Joint Committee.	Per package. Boots, Shoes and Leather.
1934, No. 127	Aug. 31, 1934	MINSTER CAKES LIMITED, Birmingham, and the G.W. and L.M. & S. Railway Cos.	Per package. Biscuits and Cake.
1934, No. 128	Aug. 31, 1934	I. & R. MORLEY LIMITED, London, and the G.W., L. & N.E., L.M. & S. and Southern Railway Cos.	Per package. Gloves, Hosiery and Textiles.
1934, No. 129	Aug. 31, 1934	MORRIS BROTHERS, Shipley, and the L.M. & S. and L. & N.E. Railway Cos.	Per package. Clothing, Drapery and General Stores Wares.
1934, No. 130	Aug. 31, 1934	NORTON MOTORS LIMITED, Birmingham, and the G.W., and L.M. & S. Railway Cos.	Per Motor Bicycle. Motor Bicycles (complete).
1934, No. 131	Aug. 31, 1934	T. ROBERTS & SONS (LEICESTER) LTD., Leicester, and the L. & N.E. and L.M. & S. Railway Cos.	Per package. Boots, Shoes and Advertising Matter
1934, No. 132	Aug. 31, 1934	P. H. TONKIN LIMITED, Truro, and the G.W. and Southern Railway Cos.	Per ton. Rabbits (dead).

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OFFICIAL ADVERTISEMENTS

OFFICIAL ADVERTISEMENTS intended for insertion on this page should be sent in as early in the week as possible. The latest time for receiving official advertisements for this page for the current week's issue is noon on Thursday. All advertisements should be addressed to :—*The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.

Railway Share Market

The stock and share markets have been quiet, and interest in home railway stocks has not been maintained at the level shown last month. It is thought that the prolongation by many Stock Exchange jobbers of the holiday period is standing in the way of a renewal of interest in this market; also that some disappointment is being shown with the traffic returns. Neither cause is a satisfactory explanation of the drying up of interest which is unexpected, in view of the recent settlement of the wages dispute. The traffic receipts are likely to prove the main factor in the movement of the chief stocks during the remaining months of the year.

If these prove favourable, an appreciation is anticipated in the preference stocks of the companies. The earning of dividends on the ordinary and deferred stocks is ruled out as far as net revenue for 1934 is concerned, although this would not prevent payment of the Great Western ordinary dividend at 3 per cent., which is considered to stand in a different category on account of the policy of the board. Current Stock Exchange opinion appears to be that many exchanges from ordinary stocks into the preference stocks will take place when investors realise more closely the relatively cheap prices at which the latter are quoted.

Among movements this week there was a good deal of buying of Metropolitan assented stock on the dividend announcement. London Passenger Transport Board "C" stock was also higher in sympathy. Apart from a fractional advance in most of the debenture stocks, there were no outstanding changes in prices on the balance of the week's business. In foreign railways, interest in Brazilian stocks was less active. Leopoldina and San Paulo kept steady, and Great Western of Brazil, which had not participated in the advance of a week ago, showed some improvement in response to a little buying. Nitrate Railways shares were inclined to be lower. Argentine railway stocks were mostly quiet pending the issue of the accounts for the financial year ended June 30, although the fall in the price of wheat brought in some sellers. It is estimated in the market that the Buenos Ayres Great Southern will have earned the full first preference dividend, but that a call on the balance brought in would be necessary to pay the second preference dividend. Buenos Ayres Western is expected to show that the first preference dividend has been earned. Central Argentine is in the position of not having yet paid the dividend on the 4½ per cent. first preference stock for the financial year 1932-33.

Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

	Railways	Miles open 1933–34	Week Ending	Traffics for Week: Total this year	Traffics for Week: Inc. or Dec. compared with 1933	No. of Week	Aggregate Traffics to Date: Totals: This Year	Aggregate Traffics to Date: Totals: Last Year	Aggregate Traffics to Date: Increase or Decrease	Shares or Stock	Prices: Highest 1933	Prices: Lowest 1933	Prices: Sept. 5, 1934	Yield % (See Note)
				£	£		£	£	£					
South & Central America.	Antofagasta (Chili) & Bolivia	830	2.9.34	18,800	+ 6,670	35	489,790	362,140	+ 127,650	Ord. Stk.	26	11¾	24	Nil
	Argentine North Eastern..	753	1.9.34	8,404	— 3,001	9	71,428	96,943	— 25,515	,,	14½	5	8	Nil
	Argentine Transandine ..	111	—	—	—	—	—	—	—	A. Deb.	55	40	50	8
	Bolivar	170	July, 1934	5,100	— 150	30	43.850	47,250	— 3,400	6 p.c. Db.	10	5	10	Nil
	Brazil	—	—	—	—	—	—	—	—	Bonds.	15	11	12½	4
	Buenos Ayres & Pacific ..	2,806	1.9.34	68.957	+ 845	9	631.624	731,694	— 100,070	Ord. Stk.	26	97/16	12½	Nil
	Buenos Ayres Central ..	190	19.8.34	$132,100	+ $3,900	7	$916,700	$908,000	+ $8,700	Mt. Db.	30	10	21	Nil
	Buenos Ayres Gt. Southern	5,085	1.9.34	120.734	— 9.949	9	1,118 768	1,408,547	— 289,779	Ord. Stk.	44½	21½	28½	Nil
	Buenos Ayres Western ..	1,926	1.9.34	39,604	— 4,573	9	393,585	475,826	— 82,241	,,	34½	15¾	23½	Nil
	Central Argentine ..	3,700	1.9.34	128,704	+ 6 387	9	1,181,024	1,262,998	— 81,974	,,	28½	15	18½	Nil
	Do.	—	—	—	—	—	—	—	—	Dfd.	18	10	9	Nil
	Cent. Uruguay of M. Video	273	25.8.34	13.506	+ 532	8	109,843	112,320	— 2,477	Ord. Stk.	20	8	10½	Nil
	Do. Eastern Extn.	311	25.8.34	2.701	+ 416	8	22.461	19,866	+ 2.595	—	—	—	—	—
	Do. Northern Extn.	185	25.8.34	1,641	+ 235	8	13.204	13,028	+ 176	—	—	—	—	—
	Do. Western Extn.	211	25.8.34	1,219	— 139	8	9.031	9,980	— 949	—	—	—	—	—
	Cordoba Central	1,218	1.9.34	30,690	— 12,520	9	309,560	386,180	— 76.620	Ord. Inc.	9¼	2½	4½	Nil
	Costa Rica	188	30.6.34	20.297	— 7,045	52	218,120	240.673	— 22.553	Stk.	29	20	27½	7¼
	Dorada	70	July 1934	9,000	—	30	69,200	53,100	+ 16,100	1 Mt. Db.	76½	68¾	105	5 11/16
	Entre Rios	810	1.9.34	11.805	— 3,375	9	96 642	126 969	— 30,327	Ord. Stk.	26½	9	14	Nil
	Great Western of Brazil ..	1,082	1.9.34	7.700	+ 700	35	263,200	335,900	— 72,700	Ord. Sh.	23/6	1/2	5/8	Nil
	International of Cl. Amer.	794	July, 1934	$302,803	— $28,462	30	$3,022,796	$2,990,146	+ $32,650	—	—	—	—	—
	Interoceanic of Mexico ..	—	—	—	—	—	—	—	—	1st Pref.	1/2	1/16	1/8	Nil
	La Guaira & Caracas ..	225/8	Aug., 1934	3,930	+ 430	34	29.820	42,770	— 12.950	Stk.	16	10	81/2	Nil
	Leopoldina	1,918	1.9.34	33.896	— 1.313	35	865,719	846,125	+ 19.594	Ord. Stk.	20¼	10	11	Nil
	Mexican	483	31.8.34	$329.800	+ $81.200	8	$1,963,200	$1,596,100	+ $367,100	,,	3	1/2	3	Nil
	Midland of Uruguay ..	319	July, 1934	9.461	+ 716	4	9,461	8.745	+ 716	Ord. Stk.	2	1	1½	Nil
	Nitrate	401	31.8.34	8.927	— 848	34	174.783	79.623	+ 95,160	Ord. Sh.	78/6	11/16	3	Nil
	Paraguay Central	274	1.9.34	5.010	+ 1,420	9	41,150	35,970	+ 5,180	Pr. Li. Stk.	72	49½	70	8½
	Peruvian Corporation ..	1,059	Aug., 1934	70.048	+ 14.087	8	122.665	107.206	+ 15,459	Pref.	15¼	5	11½	Nil
	Salvador	100	25.8.34	¢10,620	— ¢6,680	8	¢82.407	¢116,546	— ¢34,139	Pr. Li. Db.	70	66½	70§	7¼
	San Paulo	153½	26.8.34	28.546	— 5,521	34	1,031,184	1,016,147	+ 15,037	Ord. Stk.	10·2	68	81	4 15/16
	Taltal	164	July, 1934	7 040	+ 3.720	4	7,040	3.320	+ 3,720	Ord. Sh.	1¾	5/8	1¾	5 11/16
	United of Havana.. ..	1,365	25.8.34	20.966	+ 7,142	8	143.210	101,016	+ 42,194	Ord. Stk.	8	2	4½	Nil
	Uruguay Northern ..	73	July, 1934	1,056	— 10	4	1,056	1,066	— 10	Deb. Stk.	6	3½	4½	Nil
Canada.	Canadian National ..	23,748	31.8.34	977,370	+ 9.785	34	21,404,488	18,826,844	+ 2,577.644	—	—	—	—	—
	Canadian Northern ..	—	—	—	—	—	—	—	—4p.c.	Perp. Dbs.	60½	38	73	5½
	Grand Trunk	—	—	—	—	—	—	—	—	4 p.c. Gar.	99¾	85	101	3 15/16
	Canadian Pacific	17,018	31.8.34	789.600	+ 84,400	34	15,771,600	14,161,800	+ 1,609.800	Ord. Stk.	22⅛	11	14	Nil
India.†	Assam Bengal	1,290	28.7.34	24.202	+ 3.523	17	459,414	373,003	+ 86,411	Ord. Stk.	79	70	80	3¾
	Barsi Light..	202	11.8.34	1.755	— 105	19	60.915	60,923	— 8	Ord. Sh.	10/3¾	70	100½	6
	Bengal & North Western..	2,112	11.8.34	38.349	— 3,959	19	976,204	950,755	+ 25,449	Ord. Stk.	29/2	24/0	28/2½	5 11/16
	Bengal Dooars & Extension	161	11.8.34	3.187	+ 34	19	50,001	50,853	— 852	,,	12/7	11/9	12/5	5 9/16
	Bengal-Nagpur	3,269	4.8.34	95.400	+ 11.609	18	2,071,950	1,864,902	+ 207,048	,,	97¼	83½	102½	3 15/16
	Bombay, Baroda & Cl. India	3,072	25.8.34	120.600	+ 10.500	21	3,186,600	3,052,200	+ 134.400	,,	11/2	10/7	11/0½	5 7/16
	Madras & South'n Mahratta	3,230	11.8.34	97.800	— 6,238	19	2,206,815	2.214,671	— 7,856	,,	12/7	11/4¼	12/7½	7 3/16
	Rohilkund & Kumaon ..	546	11.8.34	6.770	— 199	19	188,381	182,895	+ 5,486	,,	26/0	22/5	25/1½	5 15/16
	South India	2,526	4.8.34	74,469	+ 510	18	1,484,093	1,425,336	+ 58,757	,,	119½	11/2	115½	6 5/16
Various.	Beira-Umtali	204	June, 1934	57 097	+ 13 325	38	456,945	366,500	+ 90,445	—	—	—	—	—
	Bilbao River & Cantabrian	15	July, 1934	2,522	+ 180	30	12,982	10.405	+ 2,577	—	—	—	—	—
	Egyptian Delta	621	10.8.34	6.208	+ 777	19	71,386	67,211	+ 4,175	Prf. Sh.	13 1/32	1⅝	2⅜	4¼
	Great Southern of Spain ..	104	25.8.34	2,646	— 1,622	34	70,804	69,973	+ 831	Inc. Deb.	4	3	3½	Nil
	Kenya & Uganda	1,625	Mar., 1934	240 520	+ 21,064	12	638,137	606,192	+ 31,945	—	—	—	—	—
	Manila	—	—	—	—	—	—	—	—	B. Deb.	53	33½	38½	9 1/16
	Mashonaland	913	June, 1934	109,112	+ 35,582	38	840,132	576,205	+ 263,927	1 Mg. Db.	91¾	42	94	5 9/16
	Midland of W. Australia ..	277	July, 1934	11.897	— 42	4	11,897	11,939	— 42	Inc. Deb.	89	70	97½	4¾
	Nigerian	1,905	21.7.34	17,983	+ 1,938	16	406,264	356,949	+ 49,315	—	—	—	—	—
	Rhodesia	1,538	June, 1934	183,846	+ 45,460	38	1,420,241	1,054,190	+ 366,051	4 p.c. Db.	98½	80⅝	102	3 15/16
	South African	13,182	11.8.34	474,720	+ 55,065	19	9,254,748	8.190.400	+ 1,064,348	—	—	—	—	—
	Victorian	6,172	May, 1934	755,392	+ 15,381	48	8,479,194	8,811,604	— 332.410	—	—	—	—	—
	Zafra & Huelva	112	July, 1934	11,060	+ 55	30	76,861	73,331	+ 3,530	—	—	—	—	—

NOTE.—Yields are based on the approximate current prices and are within a fraction of 1/16.

† Receipts are calculated @ 1s. 6d. to the rupee. § ex dividend. Salvador receipts are in currency.

The variation in Sterling value of the Argentine paper peso has lately been so great that the method of converting the sterling weekly receipts at the par rate of exchange as proved misleading, the amount being overestimated. The statements from July 1 onwards are based on the current rate of exchange and not on the par value.